



REG. U. S. PAT. OFFICE

OCTOBER 1937

# ASTOUNDING STORIES

**GALACTIC  
PATROL**  
by  
**EDWARD E.  
SMITH, Ph.D.**

**Out of Night**

By  
**DON A. STUART**







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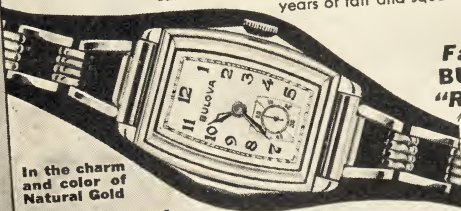
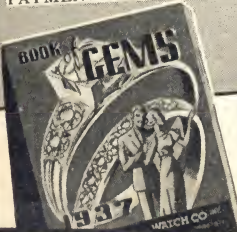
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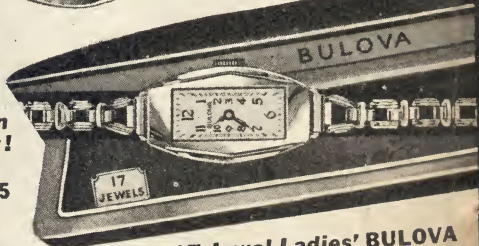
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# ASTOUNDING STORIES

Volume XX Number 2

October, 1937

A Street & Smith Publication

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- EDITOR'S PAGE . . . . . 57
- SCIENCE DISCUSSIONS . . . . . 156  
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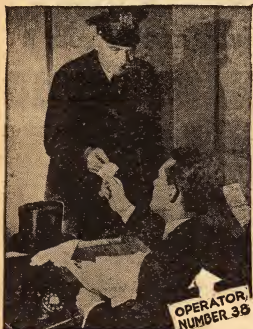
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# OUT OF NIGHT

*—moved a gigantic, manlike figure—a figure  
not in black but of blackness—a solid shadow—*

by Don A. Stuart

THE SARN MOTHER looked down at Grayth with unblinking, golden eyes. "You administer the laws under the Sarn," she clicked waspishly. "The Sarn make the laws. Men obey them. That was settled once and for all time four thousand years ago. The Sarn Mother has determined that this thing is the way of progress most desirable. It is clear?"

Grayth looked up at her, his slow-moving eyes following from the toe pads, up the strange, rope-flexible legs, up the rounded, golden body to the four twined arms, his lips silent. His steel-gray eyes alone conveyed his thought complete. The Sarn Mother, on her in-laid throne of State, clicked softly in annoyance.

"Aye, different races we are; the Sarn are the ruling race. The Sarn Mother will be obeyed by the slaves of her people no less than by her people. For four centuries the crazy patchwork has persisted—that the men have had freedoms that the masters have denied themselves. Henceforth men shall be ruled as the Sarn. The Sarn have been just masters; this is no more than justice. But be warned, you will see that this thing is administered at once—or the Sarn will administer it themselves."

Grayth spoke for the first time, his voice deep and powerful. "Four thousand years ago your people came to Earth and conquered our people, enslaved them, destroyed all our leaders, setting up a rabble of unintelligent slaves. Since your atomic energy, your

synthetic foods, your automatic production machinery, and the enormous decrease in human population you had brought about made more of goods for each man, it worked no great hardship.

"Before ever the Sarn came to this world, your race was ruled by a matriarchy, as it is to-day, and must always be. To your people it is natural, for among you the females born in a generation outnumber the males five to one. You stand near seven feet tall, while the Sarn Father—as the other males of your race—is but four feet tall, but a quarter as powerful physically. Matriarchy is the inevitable heritage of your race.

"You differ from us in this fundamental of sex distribution. By pure chance our two races resemble each other superficially—two eyes, two ears, rounded heads. You folks have two, wide-separated nostrils, four arms in place of two. But internally there is no resemblance. No bone of your body is three inches long; your arms, your legs are made as a human spine, of many small bones. Your copper-bearing foods are deadly poison to us. Your *strath*, though it seems like human hair, is a sensory organ sensitive to radio waves, and a radiator of those waves. We are two races apart, fundamentally different.

"Now, like your own matriarchy, you wish to establish upon us a matriarchal government; for this reason alone, you state, the number of males to be allowed in succeeding generations is to be reduced.

"What is natural for your race is an





*Water had short-circuited the thing on his head—it was smoking;  
as he tore it from him it grew red-hot—*

unnatural crime upon ours. Would you insist that we should eat no better food than you eat, as we should obey no different laws? Would you legislate that we should eat your foods, as we should obey your laws? Equally, in either case you destroy us. It is to the advantage of neither race."

"Grayth, you seek to tell the Sarn Mother her mind? What is best for her good? Perhaps I have been foolish to allow such freedom to your kind, allowing this 'election' of human administrators. You, Grayth, will be replaced within this week, and not by election. The laws of the Sarn will be applied at once!"

GRAYTH looked at her steadily, deep-set iron-gray eyes unwavering on jewel-flecked golden ones. He sighed softly. "Your race does not know of the ancient powers of man; you are a race of people knowing and recognizing only the might of the atomic generator, the flare of the atomic blast as power. The power of the mind is great. For ten thousand years before your coming men thought, and united in their thoughts of the unseen powers. In a hectic week your ancestors destroyed all of man's chaotic civilization, clamped on him suddenly a new world state. Before a union of thought could be attained, the thing was done, and as slow crystallization of feeling came, the poor survivors found that the conditions were not impossible. Our very difference of race protected them, to an extent, against mistreatment.

"But a crystallization has taken place during these forty centuries, a slow uniformity has built up. The mighty, chaotic thought wills of five hundred million men during three thousand generations were striving, building toward a mighty reservoir of powers, but their very disordered strivings prevented ordered formation.

"During a hundred centuries of cha-

otic thought, turbulent desire, those vast reservoirs of eternal, indestructible thought energies have circled space, unable to unite. During these last four millenniums those age-old forces have slowly united on a single, common thought that men destroyed by your race during the conquest have sent out.

"We of our race have felt that thing in these last years, that slowly accreting oneness of age-old will and thought, developing reality and power by the gathering of forces generated by minds released by death during ten thousand years. He is growing, a one from many, the combined thought and wisdom and power of the fifteen hundred billions of men who have lived on Earth. Aesir, he is, black as the spaces in which he formed.

"We are a different race. As you have your *strath* sensitive to radio, we have yet a more subtle sense, a sense reacting to the very essence of thought. That, too, has grown with the passing years. Over there by the wall an electrotechnician follows conduits, and his thoughts are clear to my mind, as the communications of the Sarn are to each other."

The Sarn Mother's lips twitched. "He pays no attention to us," she said very low, so that, in the huge room only those within a few feet of her could hear. "I doubt this power you claim. Make him come here and bow down before me—and say no word."

Across the room, the human electrotechnician, clad in the stout, ungraceful clothes of his trade, the lightning emblem emblazoned on his back, looked up with a start. "Before the Sarn Mother?" his voice echoed his surprise that he, an undistinguished workman, should be called thus before the ruler of Earth. "Aye, I—" He looked about him suddenly, his face blanking in surprise as he saw no one nearer him than the gathering two hundred feet away across the black basalt floor. A red flush of confusion spread over his face, and

he turned back to his task with awkward nervousness, sure that the voice from empty air, issuing an impossible summons, had been a figment of his own imagination—

The Sarn Mother looked with unwinking golden eyes at Grayth. "You may go," she said at last. "But the Law of the Sarn, that there shall be five of females and one of males, is the law of the planet."

Grayth turned slowly, his head bowed momentarily in parting salute. His body erect, and his tread firm, he walked down the lane of the gathered Sarn. Behind him, the six humans who had accompanied him fell into step. Silently, the little procession passed between the gleaming bronze of the great entrance doors and down the broad steps to the parked lawns beyond.

BARTEL hastened his steps and fell in beside Grayth. "Do you think she will enforce that law? What can we do? Will she believe in this mind force, this myth from the childhood of a race?"

Grayth's eyes darkened a little. He nodded slowly. "We will go to my house. The Sarn Mother is not given to idle gestures, and she cannot lay down laws and revoke them aimlessly. But—we can talk when we reach my house." Grayth strode on thoughtfully. Sunlight lay across the lawns—sunlight and green shadows under trees. They saw the occasional darting shadow of vague huge things, high in the air, smooth-lined shapes that floated wingless and soundless far above them. Then down a long avenue paved with a gray cement that would glow with soft light when night fell, they went. The broad park lands, with their jewellike palaces of the Sarn, fell behind them, then the low wall that divided the city of the Sarn from the city of men.

The broad avenue shrank abruptly, changed from the gray, night-glowing cement to a cobbled walk. The jewel-

like palaces and the sprawling parks of the Sarn gave way to neat, small houses of white-washed cement, crusted with layer on ancient layer of soft-tinted wash. For these homes nearest the Sarn City had been built after the coming of the Sarn, when the ruins of man's cities still smoldered with destruction.

The very atomic bombs that had brought that ruin to man's cities were dead now. The last traces of the cities being succumbing to the returning thrust of green, burying life. The Sarn were old on Earth and this city they had caused to be about them was old, the hard granite cobbles of the walk worn smooth and polished with the soft tread of ages.

The Sarn Mother had sat on her golden throne and watched the rains of summers smooth them, and the tread of generations of men polish them. The Sarn Mother had been old when the Sarn landed; she was unchanged now, after the passage of more than a hundred generations of men, after ten generations of the rest of her people. Only she and the seven of her council were eternal.

The neat, vine-clad houses of the city of men slipped back, and the easy bustle of the square came before them, the ancient shops where a hundred and twenty generations had bought and sold and carried on their lives. He nodded absently, smiled to friends and well wishers, noted unchanging the sullen looks of those who wore the small green shield emblem of Drunnel's faction.

Bartel's voice spoke again at his shoulder. "Drunnel's friend, Varthil, seems less sullen to-day. Did you notice?" Bartel nodded faintly toward the powerful figure clad in the balance-emblemed tunic of a legal administrator. "He went so far as to smile slightly. I am undecided between two meanings."

"There is only one possible." Grayth sighed. "He has more sense than to try to make me believe he begins to regard me as a friend; therefore, he smiles not



at me but to himself. You sent Thera as I suggested——"

Bartel nodded in puzzlement. "I did, Grayth, but—I cannot see the need of that. The Sarn will——"

"The Sarn Mother will do nothing. Wait till we reach the house." The square fell behind; the houses grew less ancient, subtly so, for the style of building remained unchanged, and the building had been good. There were no signs of decay in even the oldest. The lands around each house grew larger, too. There were more children in these cobbled lanes.

Grayth turned off, Bartel and three of the others with him; two, with a few words of parting, went on. Silently, they continued to the low, rambling house of faintly tinted cement that was Grayth's residence and office.

HERE in this low, millennium-old building, the pyramided, loosely knit government of the humans of Earth was concentrated. A structure based on town delegates from every human settlement of Earth, men who reported to district speakers who carried their messages to continental spokesmen and finally to the spokesman of man, and this was the spokesman's official residence. Six months ago old Tranmath, spokesman of man for twenty-two years, had died in this old building, and Grayth had been elected his successor, to "deal justly, and honorably and to the utmost of my ability so long as I may live, or until my body fails." Death or dishonesty alone could remove him from his position. Death, dishonesty, or—now—Drunnel, who for the moment represented both.

Responsible to the Sarn, responsible to the humans as well, Grayth's actual powers were limited purely to advisory capacities; he advised the Sarn, though they disregarded his suggestions as they liked. He advised the legion commanders, the police of the human towns,

and they, likewise, could disregard his suggestions. The Sarn Mother knew as well as he did that he *could* not enforce those laws of the matriarchy, even had he desired to; the Sarn Mother did not like Grayth.

A dozen secretaries and clerks looked up as the small party entered, and looked back to their work. Enamel-and-silver disks on their headbands, the design worked into their sleeves, showed their status in society—the book and the lamp of administrators.

Grayth nodded briefly and continued across the rubberlike floor to the low door of his inner conference room. The feet of thirty generations of spokesmen had carved into that tough, rubbery stuff a channel that circled here to avoid a column, turned back to avoid a desk that had sat just so, it or its precursors, for one thousand years. Finally, it tunneled a bit under the door, and into the low-ceilinged office. It split, as the entering parties had split those thousand years, to the nine seats about the conference table, a great six-inch slab of time-stained mahogany.

Grayth seated himself at the end of the table, Bartel, the American spokesman at his right, beside him Carron, commander of the legion of peace, Darak and Holmun, Grayth's subspokesmen. And on their heels the gray-clad electro-technician came quietly into the room. Silently, the five men nodded greeting, while the technician placed his kit on the age-worn table. He lifted from it a shelf layer of jumbled tools, exposing tiny, banked instruments, and a thin, insulated metal rod that popped up as a spring extended it.

Skilled fingers made adjustments as tiny needles swayed delicately and came to rest. His fingers touched small controls and the flexible metal aerial nodded and bowed and danced, bowing to every side of the room, halting suddenly as needles lifted and quivered. The technician lined it carefully, then looked along

its pointing finger toward the atom-flame projector, throwing dying stars of light that settled and vanished in twinkling illumination in the air. The tiny rod glowed with bluish light as he threw a tiny stud on his instrument panel.

"That makes twelve different listeners," he grunted. "I told you the Sarn had had time to install more than one."

"And the spokesmen wondered, in years gone by, that the Sarn seemed to know their very thoughts." Grayth smiled bitterly. "We may be able to advance. I am the first spokesman in ten centuries who can hold a conference without the invisible presence of the Sarn Mother."

Carron looked angrily toward the atom-flame projector. "It's in that thing? Why don't you rip the damned thing out?"

The technician grinned. "The Sarn can hear radio waves as you hear sound. To them, that listener—a tiny radio transmitter powered probably by the atomic power of the projector—emits a clear, low hum. When we speak, the crystal modulates the radio hum with our voice frequencies. My little aerial there simply transmits a wave which, without stopping the transmitter's radio frequency carrier, strips off the modulation. If I tear out the transmitter—the hum would vanish, and the Sarn would become—curious, shall I say."

"Furious," grunted Bartel. "Why won't they switch to another while we're in the room. They switch from one to another of those listeners irregularly."

"Ware's instrument would still work, whichever they used," Grayth explained. "He was merely curious as to which and how many they were using. There was no need to locate the listener." The technician nodded in confirmation.

Darak turned to Grayth with a sigh. "That being settled, tell me, Grayth, why does the Sarn Mother ask you to do—command you to do something she

knows you have no power to accomplish?"

"Because the Sarn Mother knows I will not do it," answered the spokesman sourly, "but that Drunnel would."

"Drunnel—could he influence the Sarn Mother? I never believed she would side in human quarrels unless she was directly affected—always felt she considered them beneath her notice." Carron looked to Grayth in surprise.

GRAYTH settled back slowly in his great, worn chair. He lighted his pipe and began to puff, looking lazily at the gushing, soundless stars of the atom flame. "Four thousand years ago the Sarn Mother landed, and only she herself knows how many ages she had lived before that. The Sarn are long-lived—five hundred—seven hundred years. But the Sarn Mother is the matriarch, immortal. Even her people have forgotten her age. The Sarn landed, and in the Battles of Conquest ninety-nine per cent of mankind on Earth was destroyed. The remainder were made slaves, and they, our forefathers, were the meanest, sniveling scum of humanity."

Carron moved restlessly; his face flushed slowly and words growled in his throat. Grayth looked at him, his lean, rugged face smiling ironically. "It's true enough, Carron. Those noble forefathers of ours were no great men; the great died killing Sarn, rebelling, fighting. The unconquerable spirits died because they could not be conquered—and could die.

"Four thousand years the Sarn Mother has sat on her throne and watched mankind—listened, it would seem"—Grayth nodded toward the glowing aerial of the demodulator apparatus—"to its most secret councils. She knows man with the knowledge of one hundred and twenty generations. Unfortunately, man evolves, and being a short-lived animal, evolves more rapidly than do the Sarn. The weak willness that made him submit to slavery has died out in

four thousand years. For a millennium the Mother has seen man rapidly becoming man again.

"Bartel—Carron—what is that you wear on your forehead, that medallion of silver and enamel? The thing they placed on your forehead when they said you were 'called to manhood.' The Mother believes, in her mind, that it is the badge of your slavery, and your rank in her hierarchy of slavery."

"But Ware has hollowed the solid silver of the Sarn Mother's slave badge to contain the telepath instrument. That she does not guess. She does guess, though, that man's slavery is being hollowed, a shell that may break soon. My announcement of the telepathic power troubled her more than we had guessed. *We* did not know, but she did. The ancients, before the Conquest, had begun to discover telepathy. Where we hoped a myth might impress her, she knew the fact already! By my telepath I followed her mind as she listened.

"That she learned from forgotten records, but this she has learned from watching one hundred and twenty generations of us. Man will fight and die for what he has not; woman will fight and die for what she has. Man will sacrifice everything he has for something he hopes for, an ideal; but while woman will fight for an ideal, she will not give up the good she has to gain it.

"The Sarn Mother knows that man is thinking again, after four thousand years, of the freedom he has not."

The Mother, then—means to enforce the matriarchy laws on humanity!" Bartel exclaimed. "But—that will merely inflame the revolution, not stamp it out."

Grayth shook his head. "The Mother is not so direct. She has lived four thousand years; to her a century is a passing year, and three generations of misery to humanity is a bad year in her life. She knows rebellion might flare, but she plans not for a century, but for a millennium. Her will will be done—and

the survivors will bless the beneficent Mother and her justness. What things must she do that the matriarchy laws may be applied to humanity?"

"Kill four out of every five men! She can't! Better she would kill the last of humanity trying that, for every woman will fight for her man—and be killed with him!" Carron snorted. "Before she accomplished any such slaughter, half her Sarn would have been throttled, and all humans, man and woman alike. To bring to effect the law of one and five, so many women would die defending their men that none would survive. And surely they would never serve the butcher."

"Drunnel," said Grayth bitterly. "Drunnel is her cat's paw. Women will hate the butcher, true enough, so Drunnel she's groomed for the rôle. No hatred of Sarn, no danger to Sarn. But civil war—and Drunnel. Drunnel—and not rebellion, but rebellious energies diverted against themselves. Let men kill men, and fewer women die. Let men kill men, till the beneficent Mother steps in with her hallowed legion of Sarn and stops the slaughter—when the law of one and five is reached.

"Half the survivors will hate Drunnel for his destruction and half will love the leader of their lost men. But all will praise the Mother who stopped the bloody war. The Sarn Mother plans with the wisdom of four thousand years, and not the hot temper of forty."

CARRON opened his mouth to growl something, stopped, and closed it with a snap. "I'll throttle Drunnel this afternoon," he finally vowed.

"Rendan is his lieutenant, and will take over. After Rendani is Grasun—and others follow." Bartel sighed.

"And I don't think you will throttle Drunnel this afternoon anyway," Ware said softly. "Unless he is late for his hour with the Mother, he is before her



now, bargaining and discussing weapons."

"We haven't any weapons save those air guns Ware and others have made for us—and clubs," Carron groaned. "The Mother, I suppose, will give him some of the deadly weapons by which the Sarn destroyed the ancients."

Ware shook his head. "By no means; you forget her purpose. She does not want Drunnel to win. She wants him to bring about a decimating strife. If she gives him powerful weapons and easy conquest, the war is done before it is begun. No, she will give him weak weapons, and few of them, so that he will win only after long, deadly struggle. Why, she would probably supply us with weapons, if Drunnel should get too easy a victory."

Carron threw his great body back in his chair so viciously the old wood creaked in protest. The room thundered to his curses. "I'll move my blistering legion of peace this very hour, by—by Aesir! I'll throttle Drunnel with my own hands, and I'll see that every sneaking, slinking Sarn-fathered maggot of his evil crew squirms beside him!"

"We can't. Drunnel has as many men as we—and it would not be done in an hour. We must wait till Ware's work is done, and Aesir is ready to aid us," Grayth said sharply. "If we can hold off this struggle till we are ready to help ourselves, the Aesir will be strong enough to help us."

"What does Drunnel hope to gain from this?" asked Holmun. "He is spreading his organization to Europe, to Asia, as I know. Everywhere you sent me these last two months, I have found him working, promising a firmer stand against the Sarn, more freedom for humanity. Those are campaign promises, to be rejected. But if he knows this is coming—what does he hope to gain by it, knowing, as he must, that the Sarn Mother is inciting this thing to cause slaughter, not to give him power."

AST—2

Grayth's lean, tanned face hardened and the iron-gray eyes flashed. "Power, yes, but more than that; every move Drunnel has ever made, he has found me across his path. He sought the district delegateship; I won it. He had to content himself with that of city spokesman. He sought the American spokesmanship; I won it. He hated me. Six months ago we sought the spokesmanship; I won again, while Bartel here won the American spokesmanship over Rendan, his friend. That might be enough—but he wants Deya, and Deya chose me. To him it was the finishing blow. I think the man is mad. Power and the girl he wanted—and he has been blocked in every move.

"If he must, he is not averse to destroying all mankind to destroy me, and to destroy Bartel, too. If he wins, he does that—destroys us—and he believes he will then have Deya and Thera as well.

"If he wins, he destroys me, and Bartel, the men he hates. For a time at least, he will have the power he wants, and the women he wants, not for themselves now, but because they refused him. He fights for those reasons. His followers—"

GRAYTH looked at none of them, his whole concentration turned on an inner consideration of the problem. His voice was almost a monotone, the voice of a man thinking out loud. "There will be civil war," he said softly, "because mankind is slowly growing aware of slavery and restriction. The whole race is stirring with a slow realization of confinement. But as yet, the mass of men have not realized what it is they want. The rule of the Sarn is so deep in their minds that the idea of rebellion against the Sarn Mother cannot rise to conscious levels. Mankind needs, in its restlessness demands, as never before, a leader about whom it can crystallize to express this restlessness in action. Drun-

nel's followers that will rebel against us are rebelling, symbolically, one might say, against the Sarn, since we represent the government the Sarn allowed.

"Drunnel has found, ready to hand, a mass of men who will act as he wants, to place him in the place of the men he hates. This is a fight between leaders, solely that. Only the leaders know why they are fighting. The people who will follow Drunnel against us will fight only because of a vague discontent that Drunnel has enlisted to aid him. Only Drunnel knows what it is he wants; power and Deya.

"Then he hopes to win the Mother to a new plan, not matriarchly, but a rule by men of a world of women. He knows the Mother's feelings, her realization of mankind's discontent, I believe. He hopes to compromise with her."

"He won't," said Ware softly. "I've spent hours near the Mother as the electrotechnician of the city of the Sarn. She has her plans, and they are as Grayth said. But she plans further. For a year and a half Drunnel will have power and hatred, but she will protect him. He will have near him—his wives—the best minds of the women, and she knows them: Deya, Thera, Coson—you all know them. In a year and a half the Mother will withdraw her protection, and the hate he will have stirred will kill him. Some woman will avenge her man. Deya will be spokeswoman of man. For a day in her life, the Mother will suffer Drunnel and his annoyances, that the long-time plan may be carried out."

Carron stood up abruptly. The massive old chair crashed over backward as he strode the length of the room, trembling, his great arms knotted with angry muscles, his three hundred pounds of bone and sinew quivering with wordless anger.

## II.

WARE lingered a moment after the others had left Grayth. Slowly, he pre-

pared to pack away his small kit of tools and apparatus. "Aesir, our black lord, seems no nearer." He sighed.

Grayth nodded silently. Then he said, "Can you give me one of those demodulators, Ware? You are the only hope of success mankind can have, you and your discovery. You must not be seen visiting the spokesman too frequently, attending the executive conferences. As an electrotechnician you are part of the gray background of the Sarn city, we want no spotlights turned on you. By the telepath you can follow every conference, and if you can teach me to operate that demodulator——"

Ware's usual slight stoop, the gray monotony of his work seemed to slip from him for a second as he stood erect, suddenly a powerful figure of a man, six feet tall, dark eyes set far under heavy brows, searching out with vibrant intelligence. The easy lines of his face straightened and deepened as he gazed steadily at Grayth for a long, silent moment. Slowly, he ran his lean-fingered hand across his head, wiping the telepath band from his forehead.

"I think that we will both be busy to-night, Grayth. You with the men whom you can handle, I—I have an appointment with Aesir, whom I cannot handle." A slow smile spread across the lean, tanned cheeks. "If, in the morning, the problem is still pressing—come to my house. I will probably be behind the stone."

"There is to-night," Grayth acknowledged sadly. "Let's pray that to-morrow the problem will still be pressing. Thank—er—Aesir, you have never appeared, that even Drunnel does not see you when you walk by with that kit of tools. If things so come that we—Bartel, Carron and I—are not here to press the problem to-morrow, I have this hope: that neither Sarn nor Drunnel realize their true source of danger.

"But do not come here again, please, Ware."

"Maybe that would be best," the electrotechnician agreed. He bent over to pack his apparatus, his tools once more.

### III.

DRUNNEL looked up to the Mother's slitted, vertical-pupiled eyes. Behind his own keen, dark eyes a swift, agile brain was weighing—guessing—planning. "But they are not so helpless; they have a weapon designed by one of their own men—a hand weapon that projects small slugs of metal. An air gun."

The Mother's expressionless eyes continued to stare at him, unwinking, the smooth, coppery skin of her face unmoving, the delicate, barely unhuman face hiding the thoughts of more than four thousand years. "I do not mix with human quarrels, save when they affect my Sarn," she said softly. "If this quarrel of yours gets out of hand, I will send my legion to stop it. But Grayth does not please me, and he has no desire to enforce my laws. I will give you those things I mentioned, no more—the crown and the glow beam. You will have one thousand of each; the rest of your forces will have to fight on terms equal with theirs.

"Sthek Tharg, take them to the hall of arms and let them have those things." The Sarn Mother's eyes closed behind opaque, coppery sheaths; she sat motionlessly as the Sarn she had called uncoiled his arms and rose slowly from his padded chair. On noiseless, padded feet he stalked off across the great hall of assembly. Behind him, Drunnel and his six companions followed.

"Call others," Sthek Tharg snapped.

"Rendan," Drunnel spoke softly, "tell Sarsun we will need seventy-five men, preferably discreet men, at the gate just after dusk. That will be in two hours now. I will send some one else to lead them when we are ready."

Rendan dropped from the group and

hurried through the labyrinthine corridors to the outer park, down to the human city. Drunnel followed his silent guide through unfamiliar passages, to an elevator that dropped them one thousand feet to a dank, cold corridor that lead off to unfathomable reaches of dimness, a corridor lighted only sparsely by far-scattered atom-flame projectors burning at an absolute minimum.

The Sarn started off firmly toward the left. Doors opened from the corridor at long intervals—doorways opening into dim-lighted halls burned by atomic blasts in native, sparkling granite. Something of the crystalline fury of the blasts lingered yet in their glittering, scintillating walls. Under dim lights, vague, vast structures of crystal and metal and plastic loomed in indeterminate dusk. The feeble, dying sparks of atom stars served only to make horrific outlines discernible. Vast, many-legged things of metal, built with huge ropy things that dropped dejected near them—ropy things of glinting metal ending in things strangely like Sarn hands, with their many-boned flexibility.

Other rooms were filled, cabinet above cabinet, with boxed devices—things that might, of course, be no more than searchlights. The armory of the Sarn! Unused these four thousand years.

Drunnel looked at the shrouded things with keen, dark eyes. His lean, muscular body never slowed in its step; the thin, almost ascetic face never turned. Only the dark eyes darted from dark doorway to huddled, half-gl glimpsed mass—the doorless doorways, without bar, or light-beam interceptor. The elevator answered to any being's control.

THE SARN turned his head, rotated it till his slitted eyes stared straight to Drunnel's, while he walked steadily forward. The line-thin gash of his mouth opened in what might have been a smile. "I will get the crown and the weapon.



It is not—advisable that humans cross the threshold of these doors.”

He paused a moment, and the body and head rotated in opposite directions till, alike, they faced a dark doorway. He walked toward it, and as he crossed, a spark of the atom flame in the dim room's ceiling floated down, living strangely long, to burst abruptly before him. It burned for perhaps ten seconds, dying with a shrill, clear, tinkling note during all those seconds, fading into dimness as the thin, keen note died with it.

Drunnel, twenty feet away, relaxed slowly, his knees bending under his weight, till he crouched on the floor, his powerful, six-foot body crumpled under its own weight till he was on hands and knees, his head dangling in limp agony, all his muscles quivering, jerking, dancing madly under his skin.

The thin, sweet note died. Drunnel raised his head slowly, white as paper in the light of the corridor, streaked with sudden, clammy sweat. His dark eyes, bloodshot and wide now, stared into the slitted ruby eyes of the Sarn in the doorway. The Sarn's thin mouth twitched slightly as he moved into the room. The atom flame in the roof leaped up with his moving, and the cabinets of the rooms stood out in clear relief.

Drunnel climbed slowly to his feet, dark, bloodshot eyes snapping with an inexpressible hatred that tugged at him like a living thing. One shaky, trembling step he made toward that doorway, insane anger flooding him. Then, slowly, his mind regained control as the agony washed from him, and he stood, trembling half from weakness, half from a mad desire to crush the thin-lipped mouth of Sthek Tharg. “Drunnel”—he turned, to see Grasun, an unsteady hand stretched toward his leader, staring up into his face with tortured, worried eyes—“don't—stay here.”

Drunnel snapped the hand from his

sleeve. “I'll stay,” he said softly. He glanced at the others: Farnos, leaning dazed against the wall, blood trickling from his nostrils; Tomus working himself to his feet with the aid of the rough wall; Blysun swaying unsteadily on his feet. The others were still helpless on the floor. “He might have told us what was coming.”

“He wanted to warn us—against entering the rooms—and didn't, perhaps, realize how—strongly it affected us,” Farnos said.

Drunnel looked at him silently. Farnos dropped his eyes uneasily and struggled to his feet, one hand steadying him. The effects were passing swiftly. Inside the room rumbling wheels echoed softly; the Sarn was pulling a little four-wheeled truck loaded with a hundred or more small gray cases, perhaps four by twelve by three inches, and a dozen or so round cases four inches thick and a foot in diameter.

STHEK THARG stopped, just inside the door, and eyed them. “Perhaps,” he said ironically, “you would be more comfortable farther from that doorway as I pass through.” He started forward. The humans scrambled away from him. They were fifty feet away when the thin, sweet note of a dying star of light thrilled through them, jerking, straining, quivering. Drunnel stood his ground, leaning slightly against the wall. The Sarn moved toward them, the low rumble of the rubber-shod wheels changing its note as the cart rolled into the corridor.

“Come here and take the crowns. They will protect you against the crystals—if you are not too close.” Drunnel came toward him, took one of the round boxes, and from it the curious crown. It was a band of metal that circled his head, padded with rubber on the inner side, eight erect, outward-slanting metal rods, ending in dull-

golden globes, perhaps a quarter of an inch in diameter. Nested in the center, above the curve of his skull, a tiny mechanism was inclosed in golden metal.

"It will throw a sheath of energy about you which is proof against any material thing, and deadly to any being wielding a metal object against you. It holds in near stasis the molecules of the air, so that the sound of the crystals will not reach you—if you remain at a little distance. And it is defense against the glow beam."

Drunnel mounted the thing on his head, slipping his headband of silver and enamel into his cloak pocket. He touched a tiny stud at his brow, and a slight shock of energy lanced him momentarily. The Sarn's voice was softened, muffled by its action, and he snapped it off.

"The glow beam"—Sthek Tharg opened one of the flat boxes to disclose an object fashioned of black plastic, dully lustrous metal, and one single crystal—"carries a charge sufficient to paralyze, for a day, five hundred men, paralyze for a moment nearly one thousand, or paralyze forever two hundred. This slide controls the action—this stud the discharge."

He raised it in flexible, many-boned fingers, his almost tentaclelike arm looping up with it. It pointed down the corridor, and as he touched the stud briefly, a clear, sweet note seemed to dart down the faintly luminous beam that shot forth, to vanish in unseen reaches of the corridor. "Its range is about a third of a mile."

Drunnel took another from its flat case, examined it, and put it quietly in his cloak. The others were fitting the curious crowns to their heads, and, a moment later, unloading the little truck.

Sthek Tharg returned to the dim room. Again the dying star shot toward him, and the atom flame leaped up. Drunnel touched the stud at his brow, and heard very dimly, as though far off,

the sweet, torturing note of the crystal. It made his teeth hurt, as though an unseen drill were working in their depths. He took five cautious steps toward the doorway, till sweat started from his face and his limbs began to tremble. He snapped off the stud and walked toward his men. They, too, were snapping off the energies—

"Grasun, turn yours on." Drunnel watched; there was an instant of wavering energy, as though a sheath of heat waves had risen suddenly about the man—then, nothing—nothing save the slightest of distortions that only his expectant eye could detect, that, and the slightly duller appearance of the eight metal globes on the crown's eight points. "Can you understand me readily?" Drunnel spoke in an ordinary tone.

"Perfectly," Grasun replied, nodding in confirmation.

"Good. Turn it off. We will have to move these things to the elevator, then again to the gate of the Sarn city. And—there is something I want to find out—"

The Sarn returned with the small truck. Drunnel stood alone, watching his men carrying the last of the boxed weapons to the elevator. He started in surprise at the first note of the dying crystal, snapped the little stud as he turned to watch Sthek Tharg. The Sarn stepped through expressionlessly, the little truck behind him. Drunnel walked toward him as the notes died in the air, his hands reaching toward the piled boxes—

"Stop!" snapped the Sarn. He fell back a hasty step, slitted ruby eyes blazing angrily. "You have a sheath of energy around you, fool. Turn off that crown."

Drunnel looked at him, mumbled a vague apology as he turned the stud. Rapidly, he lifted the boxes from the truck; he had learned what he sought to know. The Sarn were not immune to the sheath of the crown.

## IV.

DEYA opened the door at his knock, and Grayth stepped in with a backward glance at the dimly seen groups in the tree-shaded street. The last colors of sunset were fading from the sky, and the darkness slowly saturated the clear, cooling air. The spring nights were not yet hot as they would be in another two weeks. A near-full moon hung halfway up the eastern sky, its light not yet appreciably affecting the dimness of the scene.

Deya looked over his shoulder, and motioned him in. "They look more restless than ever, Grayth. Thera came this afternoon—she is fixing supper now—and told me that Bartel believed the explosion would come soon."

Grayth nodded slowly and shut the door behind his back. He looked unhappily into the clear, calm blue eyes raised to his, eyes like bits of cobalt glass in a delicately molded, determined face. Six feet two Grayth stood, but Deya was a resurgence of a four-thousand-year forgotten blood, a clear, Norse strain. Her eyes were not three inches below his, her red-gold hair, her clean-lined body the living remembrance of a race human minds had forgotten.

Grayth sighed, took her in his arms. "The explosion will come to-night, dear girl. In three weeks—or never—we will be able to end this indeterminacy."

Deya's hands rested lightly on his shoulders as she leaned backward slightly to see him more clearly. His lean, strong face was set and serious, the etched-iron eyes worried. "The Mother has helped Drunnel as you feared?"

Grayth nodded. His finger touched the telepath disk at his brow. "Have you tried to follow any of his men's thoughts to-day?"

Deya smiled. "No, I tried to follow yours. I could not for some reason, only occasional snatches of ideas. You were

very angry about four o'clock this afternoon."

Grayth nodded. "We had a conference. Drunnel has gotten weapons, and though I cannot follow his mind, as you know, I did follow that of Rendan. But Rendan was sent to gather men to carry away the weapons the Mother gave, and did not follow everything that happened. By Aesir, I wish I could follow Drunnel. That he should be one of those rare, complete nontelepaths!"

"What are the weapons?" Deya asked.

Grayth shrugged. "Rendan did not know—nor, I believe, did Drunnel. But you know what I have said; the Mother will not give him either a hopelessly powerful, or hopelessly numerous stock of weapons. I suspect a weak weapon of attack, and a powerful weapon of defense for a few."

"Let's go out to the kitchen." Deya moved in his arms, and started away. "Thera hopes Bartel will be able to come." For a moment the cobalt-blue eyes clouded in inner concentration, as did Grayth's. They nodded together as Bartel's thoughts reached them, weak and unclear with distance. He was coming.

For a moment more Grayth caught the strong, lithe body in his arms, then they moved on to the kitchen. Thera had placed a table on the stone-flagged terrace behind the kitchen, under the trellis work of dark-leaved climbing roses. A few first buds were opening in the cool night air. The last washing colors of sunset had faded from the sky and the shadows now were those cast by the moon, and by the silently flaring atomic-flame projector.

The table was set and the food being brought when Bartel knocked. Thera went to admit him, and as she passed Grayth he suggested softly that she bolt the door when Bartel had entered.

A MOMENT LATER the two returned. "They are standing around in



groups," Bartel said, seating himself wearily. "I got a number of hate thoughts, and a number of friendly thoughts as I passed them. The groups seem about equally distributed as to sympathy, and I think that is one reason why I was not bothered at all on my way here. Perhaps we had best eat quickly. We may be—called out later."

Three quarters of an hour later, Grayth and Bartel sat in the moon dusk, puffing slowly at their pipes. Deya and Thera moved quietly, stacking and washing utensils. Grayth pulled a small, flat jar from his cloak and put it on the table, looking questioningly toward Bartel. "Perhaps we might apply a little now."

Bartel grunted. "Moon cream. Does it work as well as Ware thought it might?"

Grayth smiled. "Better. I see you are wearing your official crimson and blue. Mine are about the same. With this——" Grayth rubbed the paste over his hands and arms to the elbows, then over his face and neck. It vanished on his skin, colorless and invisible, in the light of the atomic flame. He rose and walked the length of the terrace, down into the garden, where only the pale moonlight reached him. As he stepped into the shadow of a gnarled, spreading, apple tree—he vanished, a black shadow in blackness. As he stepped out into the moonlight again, crimson cloak, dark-blue jacket and trousers, face and hands alike were jet black. Slowly, he re-joined Bartel.

"It works," agreed Bartel, smearing the colorless stuff into his skin. "I hope it's harmless."

"It is. A harmless substance that will not reflect polarized light. You know the moonlight will not show colors—though the eye and the brain are tricked by it. To-night it will serve both to make us invisible in shadow, and as a badge; Drunnell does not have it. All our men do."

"Carron was gathering the men and

distributing these things when I left him." Bartel looked out over the moonlighted town. "He was still busy. Listen!"

A voice cried out somewhere in the direction of the square, the center of the human town—a dim, unrecognizable voice, crying out a blurred word time and again. Other voices joined. It grew and washed across the city, a many-times-repeated chant that grew with its moving, washing toward them in unrecognizable syllables, till a half dozen voices two hundred feet away took it up with a gleeful howl: "Drunnell—Drunnell!" Feet pounded with a muffled beat across lawns, hardening momentarily as they traversed stone-flagged walks, dying in the distance.

"He was busy, but the human town is annular, with the huge area of the Sarn city in the middle. Many men from the far sections had not been able to reach him yet. We were not able to use the vision instruments to spread our messages—Drunnell, since he has the Mother's help, did," Bartel finished hurriedly.

"He has another swift method of communication," Grayth pointed out. "It has rolled around the city in less than a minute and a half. They will be pouring into the square."

Somewhere outside a man shouted, screamed a curse as a muffled *thunk* cut it off abruptly. A bedlam was loosed, a score of cursing voices, a great bull-roaring voice giving orders, scurrying feet and the clang of metal on metal—and on flesh. It stopped with a long-drawn, thin scream that died away in gurgling bubbles of sound. The door of the cottage trembled to heavy blows.

GRAYTH was halfway through the house before the second blow sounded, moving in slow-seeming strides that propelled him, as though half floating through kitchen and hallway. In his hand a bluely lustrous bit of metal



*A roaring column of the atomic blast—a force designed to wash down mountains—vomited forth—*



*"I am not matter, nor of forces such as your beams, your rays can touch.  
I am all of mankind that has ever been——"*

gleamed. "Who's there?" he demanded. "Carron, ye fool. Let me in. There's more coming down the street, and there's no need for arguing with them."

Carron burst in, an immense figure in torn greenish cloak of the legion of peace, a dozen men at his heels. In his immense hand a three-inch-thick table leg, knicked deeply in three places, and smeared with blood, seemed a thin wand. The door bellowed like a sail in the wind, as his huge hand cuffed it shut. "Bars," he grunted. Two of his men slammed over the heavy metal, locking bolts.

"They've started, Grayth, and my men are gathering. They put their messages out faster, since they could use the vision—and we couldn't. Damn the Sarn! But we'll be evenly matched in the square, if the Mother didn't give Drunnel half her armory."

"She didn't," Grayth answered positively. "I told you she wants us matched—with Drunnel having a bit of an edge."

"Why couldn't we use the vision?" asked Thera, looking into the crowded room.

"Perhaps you had best lower those shutters," said Deya softly, "or turn out the lights. You are conspicuous and crowded in that window."

Carron smiled broadly at her, ducking his head to pass under the door beam six and a half feet from the floor. "I should have thought of that." He reached for the control rope, and the thin metal vanes of the shutter slipped almost noiselessly into place over the windows.

"The vision central offices are in Sarn city," Deya explained to Thera. "The Sarn watch them; they offer no chance to send through messages we would want and the Sarn did not. Coded messages might work, if every man knew the code, but if every man knew, the Sarn would also know soon enough."

"The rest of the speakers are coming here later," Grayth said to Carron. "We must get them here safely——"

"I sent three strong detachments to gather them in," Carron grunted. "And I came here myself. I'm going to get the whole lot of ye in here and throw one good guard ring about the place. That'll save me men and allow a better guard. I've got men in every house about here; not a man of Drunnel's could weave his way through without alarm being sent in. The moonlight is tricky, a crawling man seems a bit of a shrub, but these men are in their own houses. By Aesir, they know what shrubs they have—and Drunnel's men have no face-blackening moon cream."

"They have lamp black," said Deya. "They may use that."

"If they think of it. It makes them conspicuous then when they are in the light." Carron nodded. "What plans have you made, Grayth?"

"No detailed plans, for we are not ready. Had we had another month—even a week, perhaps—we might have learned then to summon Aesir to our aid, and we had plans for that. But now—we must do as we can. Look; first the leaders, the speakers, must be concentrated and guarded here. Then, to stop this battle, we must somehow destroy three men; Drunnel, Rendan and Grason. Beyond that succession the power of the leadership is not determined among them, and they'd fight among themselves. If that could be done this night, the month we need would be gained. The Mother would see that one of the others took up the fight, but not immediately; time would elapse. Drunnel, Rendan and Grason."

"Right." Carron nodded. "But they'll be at the square, in the center of their men. They'll be hard men to catch, and quick-footed men."

Grayth touched his headband fleetingly, his eyes intent on Carron. "We may be able to outguess them." Carron's eyes lighted with understanding.

"Aye—we might. We can try."

"The speakers with their escorts are



almost here," Deya said, her eyes clearing from an effort of concentration. "Perhaps the door——"

A MAN sprang to draw the bolts as a knock sounded outside. A moment later ten men in the crimson cloaks of the speakers entered, crowding about in the tiny room. Fifty men in the dark green of the legion of peace, and a score in civilian motley waited outside. Carron stepped to the door. "A line of you—about the cottage and move outward till you surround the block. Make sure there's no man of Drunnell's within your line."

The men faded into nothingness under the shadowed trees, vanishing in silence and darkness under the deceptive moonlight, seeming so bright, yet actually colorless and dim. Carron closed and barred the door behind him.

"We'll take those men and join at the square. I haven't heard a sound since the call of Drunnell's men," Grayth said. "I'll go with you, Carron, and we'll start at once. Somehow we must get Drunnell, Rendan and Grasun."

"They won't agree with us," said Bartel sourly. "They no doubt have similar plans on you. It seems to me that you would be much better off staying here and letting us do that, for just as surely as Drunnell's forces collapse with his disappearance, ours collapse if you are taken. The battle would be over, right enough—with Drunnell in power."

Grayth shook his head. "The speakers are here; they will be goal for many of Drunnell's men, but Drunnell will not want them," he said softly. "Drunnell wants me, and you. Therefore, we will go where he cannot find us. If we stay, he can lay plans to attack us. If we are somewhere in the city, our group can lay plans of defense, knowing where we are, while Drunnell, not knowing, cannot plan attack. And—we have work."

Bartel stepped through the door after him. As the three faded into the shad-

ows, the dry grating of the bolts rattled the door behind them. In a moment their eyes became accustomed to the moonlight, the dimness seemed to roll back, and the silvery light grew stronger. Presently it seemed that it was illumination as effective, as strong as daylight. Then, abruptly, a shadowy being emerged from the darkness under a tree, appearing as though from thin air. "There's no one between the cottage here and the ring of watchers," he murmured.

Carron nodded. "Gather the men near—Phalun's cottage. We'll make for the square." Carron hefted the table leg in his hand, and slipped into the shadow with the others. Grayth halted him, took the heavy weapon from him.

"Whatever the Mother has given them, it will more than likely be electric in nature," he said after a moment. "Discard metal and take wooden weapons. Warn your men against metal things."

At the corner of a tree-shadowed cottage they met the troop of men, and Carron passed the warning along. The soft clink and thud of metal followed slowly, reluctantly. The force dispersed quietly, groups of two and three wandering off to return moments later, silent, drifting shadows in the moonlight, carrying faintly lustrous table legs and chair legs of nonconducting, plastic material, one with a five-foot, pointed plastic rod ripped from an atom-flame projector. And at the hip of each swung the blued-metal air guns.

SILENT, drifting ghosts they passed down the streets, scattered under clumps of moon shadow, following the lawns and dust-muffled roads. Slow accretions joined the party as the stragglers from outlying districts appeared. Three times there were brief scufflings and cries that were silenced under dull, muffled blows. White faces in the moonlight looked up sightlessly as they passed on

—white faces, the badge of Drunnel's men.

There were lights in the square ahead, far down the street. Early arrivals stood about in tense idleness, awaiting the coming of reinforcements for both sides. Grayth turned down a side street, crossing at right angles toward the sound of a compact body of men advancing on a parallel street. A moment later they saw them, dark figures with white faces, marching toward the square, a group of half a dozen in the lead, wearing curious gemmed crowns and carrying foot-long instruments in their hands.

The drifting shadows in the deeper shadow of trees dispersed, vanished save for little wraiths of blackness moving behind cottages, in absolute silence. The troop of Drunnel's men moved on alertly, eyes darting about, clubs and knives at the ready. A dense mass of three great trees darkened the road ahead, and they marched into it.

A dozen were down before they fully realized the assault. Carron's great voice boomed out in exaltation as he recognized the leader. "Grasun, by Aesir, Grasun!" A roar went up from the compact group of Grasun's companions.

And through it came the sweet, thrilling, killing note of the glow beam Grasun carried in his hand. Its faint light shot out straight for the black shadow of a charging man bearing the mace of a bulky table leg in his upraised hands. The beam touched him, sang through him, and roared in sweet, chilling vibrations as though his twisting, tortured body were a sounding board. The men near him writhed and fell, twisting, helpless, their weapons dropping from numbed, paralyzed hands. Drunnel's men charged forward with a cry of triumph as the beam of the glow tube swerved. Again the thin, shrill note stabbed out toward a darkened figure. For a moment he glowed, writhing, falling, his joints cracking suddenly as maddened muscles distorted him

impossibly, his dying body a sounding resonator that paralyzed those near him.

Another glow beam came into action as Carron's great figure lunged forward, the table leg upraised in huge arms. Leaping Drunnelians tumbled from the mighty, charging body; for a fraction of a second he loomed over Grasun.

Grasun stared up, his white face lifted to the moonlight, a smile of pure joy in it as he turned his weapon slowly toward the colossus towering six inches above him, three hundred pounds of bone and sinew. The table leg crashed down toward what Grasun knew was impenetrable, invisible, shielding force. He pressed the stud of his gun as the mace contacted his shield, with all the force and momentum Carron's shoulders could give it.

Grasun fell to the ground, while the pale beam of his ray shrieked its way through the treetops. Carron dropped his splintered club from numbed fingers. The sheer momentum of the blow, unable to crack the shield though it may have been, served to stun the man inside by the vicious jerking it imparted to him. Carron saw the strange, glowing rod wavering toward him again, felt the stunning impact of another attacker's club on his shoulder, and spun with a roar of rage. His immense hands closed on the attacker, the giant arms lifted him like a squalling child above Carron's shoulders, to crash him on the force shield of the fallen man. A high, thin wail of terror escaped him as the arcing energies of the field crashed through him. He fell, a smoldering, quivering thing, at the feet of Grasun.

"Rocks!" roared Carron, leaping from the scene of battle. "Rocks for those with the crowns! Bombard 'em!"

OTHERS of Grayth's men had not leaped so hastily to close contact. The soft coughing air guns were bringing down many of the Drunnelians, groaning as heavy slugs broke bones, silent

when they struck an instantly vital spot. The bullets fell away from those who wore the crowns, who stood unscathed, their whining weapons of the Sarn Mother stabbing at vague shadows retreated now into the greater shadows of the trees.

A cobble of granite the size of a man's head hurtled out of the darkness toward Grasun as he staggered uncertainly to his feet—a cobble hurled by an unseen giant. The shield deflected it, stopped it, but the meshed forces transmitted shattering momentum to the man who wore the crown. Grasun huddled on his knees, shaking his head, his weapon fallen to the ground beside him.

"Rocks!" Carron roared. "Rocks—big rocks, you blasted, withering idiots! Not pebbles, you howling fools, rocks! They have a shield—a shield of force. But it shakes 'em when the rocks hit 'em——"

"Throw at Grasun." Grayth's voice snapped out of the night, low and tensely clear. "A dozen of you—heavy stuff."

A rain of granite cobbles, unearthed from a forgotten pile, stormed out of the night. Half a dozen struck the fallen man's shield with a blasting force. From barely within the protective shadow of the tree, Carron's huge arms heaved a boulder of eighty pounds weight. The deadly thing crashed down on the straining shield with a snapping of energies, held for a moment as though bouncing on unseen rubber, and fell to one side. Grasun rolled end over end under the impact, struggling dazedly to rise. His voice called out in muffled syllables to the milling men around him, but they dared not help him; the shield was death to touch.

"Carron—Carron—think!" Grayth's clear, sharp voice penetrated the roar of fighting men. Carron stopped bewildered for a moment, then strong in the telepath came his orders. Immediately his great hands swept a dozen others of his men into formation about

him, each with a boulder in his hands. They burst from the shadows, and heavy rocks flew. The crowned men fell, staggered aside at the heavy burst of ammunition. The giant charged in at the head of his men, two great table legs flailing in his hands. The disorganized mob of Drunnelians parted as he charged toward the groggy Grasun. But before he came too near the invisible death of the shield, he bent and picked up the glow-beam projector Grasun had dropped. Carron fled again to the protective trees.

Boulders were effective on crowned and unshielded alike. The steady rain of deadly ammunition was disrupting the aim of the glow-beam wielders. The apologetic little cough of the air guns in the hands of practiced men were making the Drunnelians fall like blighted grain.

The last of Drunnel's unshielded men were down, or gone. Half a dozen wearers of the crowns stood in a tight circle, firing their strange death into the shadows. Grayth joined Carron beneath a great tree, and took from him the slim, warm tube of the weapon taken from the fallen Grasun. "A man you can trust," he snapped. "Send it to Ware; we must get others. Don't let those men escape; we must get Grasun."

"Tarnor—take this. You know the house of Ware. Take it to him. Run." The man was a crawling figure, sprinting across a lawn, then gone from sight. "Now"—Carron turned to Grayth—"we can keep their fire ineffective so long as the rocks hold out, but how can we crush those shields? It is death to touch them, it seems. I saw eight of their own men die when they stumbled into them."

A man materialized out of shadow beside Carron, a great wooden bucket in his hands, his invisible face split by a toothy grin. Carron took the thing in huge hands, and stepped forward; his huge arms creaked to the strain as it

leaped into the air, to fall in a silver rain over the shielded men, running, trickling, wetting the ground at their feet. From another side another bucket leaped into the air, to drop over them, some few drops resting for a moment on the invisible sheath in darting, arcing energies. Another and another—

Grasun howled—a shrill scream of terror and agony. Water had short-circuited the thing on his head; it was smoking; as he tore it from him it grew red-hot—white; it exploded with a roar of sound a burst of incandescent energy that limned attackers and attacked alike in glaring light. Grasun fell to the ground twitching, rolling—and suddenly stilled as he touched the hem of another's shield. A roar of triumph went up from every tree, every cottage corner.

## V.

THE pistoled legion of peace had been driven into the buildings surrounding the square. In the center of the square, surrounded by two score figures, Drunnell and Rendan directed the battle.

Grayth waited in the darkness just beyond, while Carron closed up his communications. Darting runners brought messages. Eyes dulled with an inner concentration, Grayth sat motionless, gathering information by telepath from a hundred hidden points, from men in the cottage they had left, from Deya, from Ware in his underground workshop. The secret of the glow beam—

"The shield muffles voices," Grayth said to Carron. "They also stop the glow beam then, for Ware says it projects a beam that carries an ultra-sonic vibration that is death to man—and probably harmless to Sarn."

Carron grunted. "The men in the buildings had already found the danger of metal, but they hadn't learned the trick of the rocks. I—"

Somewhere in a building, lightless and darkened, a sudden, terrific glare ap-

peared. The windows were solid squares of thrusting radiance, spotlight beams that shot their brilliant knives through weak moonlight to limn for an instant the crouching figures in the center of the square. Drunnell stood up, baldly outlined against a fierce beam of light, his face surprised, startled.

"Water." Grayth smiled. "I got the message through to Paultur. One of Drunnell's shielded men was trying to drive them out of the building. I wonder—" His eyes closed for a moment. "No, the weapon was destroyed, too."

Another virulent flash burned through the windows of a near-by house; in the first a duller, redder light was growing. Men were darting out of the place, smoke trailing behind them. The exploding crown had set fire to the aged-dried woodwork.

Men were filtering out of the shadows, dim clots of a more solid black in the blackness under the tree. A fitful redness was growing in the moon-drenched square as the ancient woodwork of the ignited house yielded to the growing flame. The dimly seen messengers came near to Carron, speaking in low voices, Carron's deep bass growling in reply, till they vanished again on some mission of communication.

"Grayth," the giant's voice rumbled in its softest tones, "the men in the buildings can't get near enough to Drunnell's group to throw the heavy rocks. The glow beams make it impossible, and until they get near they can't disturb the aim. Is there any way we can shield our men against the beams?"

Grayth was silent, but in his telepath Carron could feel the tenuous thread of mind energies reaching out to Ware, to others of their group. And dimly, he could feel Ware's answering thought. Screening—each man wrapped in sheet metal carefully grounded, worn over a thick padding of cotton, or quilting.

Carron muttered disgustedly. Grayth



looked up at him, nodding. "Impossible, I know."

Shielded men were leaking away from the group in the center of the square, darting down narrow side streets before the rocks hurled from near-by buildings could knock them from their feet. Other shielded men were coming toward the square from every direction, men from more distant sections of the annular city. They were waiting in the back streets outside the square, moving in restless circles.

CARRON touched Grayth's sleeve. "We can't do it in this try, Grayth," he growled. "The shielded ones with their weapons are surrounding the square. We'll be caught helplessly if we don't retreat. I've sent word to those others that——"

"If we don't reach Drunnel to-night, we'll never be able to," Grayth groaned. "The Sarn Mother will give him better weapons, and waverers who had joined us will transfer to him when they see us in retreat."

"We must retreat at once," insisted Carron unhappily. "If we only had some means of swift communication—if we had only been able to map out a plan, and put it across to all our scattered people. We didn't have time; we didn't know what weapons Drunnel would have until too late. I know now what we should have done. Perhaps it is not too late, if we can once join our forces. Because all meetings have always been held in the square, all our men are rushing toward it. I'll call the men out of those buildings at——"

A wild rush of feet sounded down the great, radial artery. A hundred men with the darkened faces of Grayth's supporters swept down the street, half a dozen glow tubes in their hands, and many empty water pails among them. The hidden men in the buildings of the square cheered them on, and a fusillade of air-gun pellets rattled on the stone

flags. The mass of men broke up, scattering before they came in range of the pale beams of death. Long before Carron's messenger reached them their compact formation was gone; they were filtering through back streets into every building of the square.

But Carron's runner brought back a new interpretation of this reinforcement; they were not running to the charge, but falling back before more than fifty armed, shielded Drunnelians. Another band of Grayth's men rushed in from another artery, vanishing like smoke in shadows and shadowed buildings. The torch lighted by an exploding crown was growing; the red flare of a burning building was rapidly making the moonlight unimportant, the moon cream useless. The fire was spreading.

Two score of Drunnel's fighters appeared down the street that had recently brought Carron's green-cloaked legionnaires. Carron settled back under the tree in helpless rage. "We won't retreat, Grayth. We can't now, for Drunnel has driven half our men into this square, between his central, unassailable group and the ring of other men, and the buildings sheltering them are burning. I haven't seen a score of Drunnel's unshielded fighters; *they're* probably in the outskirts, keeping the rest of our men from relieving those inside the ring."

Grayth looked at the spreading flames consuming the buildings. Stone for the most part, they were roofed with metal or slate, but the floors, walls and supporting beams were of wood. These were burning furiously. A burning house collapsed as he watched, the fierce heat of the internal furnace crumbling age-hardened mortar, loosening the aged stone.

Drunnel stood in the light of the fire, watching his circling fighters on the outskirts. His arms moved, giving orders, pointing out directions of movement. A messenger ran toward a broad artery, down which a score of weaponed men

were moving. A rain of half a hundred great stones crushed him to the ground and a stream of water drowned his screen into exploding fire as he passed too near a house. Another messenger started after him, dodging, running in irregular movements. A well-thrown rock knocked him from his feet, and a steady rain of them held him helpless till water drowned his screen in turn. A roar of angry triumph went up.

Drunnel's arm stayed another man who started toward a broader road. Drunnel shook his head, shrugged his shoulders as the man motioned violently, attempted to pull away.

"They can't enter the buildings," Carron growled. "The water and rocks stop that. But they don't have to. The fire is already there." He nodded toward a group of men working on a roof top with a garden hose, their dark-green cloaks flapping in the faint wind. A glow beam reached up from somewhere beyond the square, and a man crumpled in death. Three near him stiffened and jerked, one to slide from his position into the growing furnace.

A MESSENGER panted up from the shadows, the glow of the flames giving color to his cloak, washing the blackness of the moonlight from his face. In his hand he held three of the crowns. His face split in a grin. "They don't have—they turned—on—all the time."

Grayth stepped forward eagerly. "Three of them. How did you get them intact?"

"A dozen of us—we saw them coming down the road, and hid in the shadows. They did not have their shields turned on, and three fell in the first volley of the air guns. The others we washed out with water, but these we saved."

"Well," Carron pointed out bitterly, "that improves the odds. We now have three effective men who can stand up against their near thousand—maybe.

Your technician friend may be able to duplicate them, though—in a month."

"Tarnsun," Grayth called softly to the figure half visible in the light of the flames, "take this to Ware. You can penetrate the lines Drunnel is drawing about us by wearing this, turned on full. If—— Never mind, just go back and wait." Grayth had caught the weary denial Ware had sent. Grayth's thought had reached Ware at once, reached a tired, immensely busy technician, struggling with things of more immediate consequence.

Grayth turned the things in his hand, gave one to Carron. The giant spoke suddenly, pointing toward the square. One of the shielded men had stepped from the group, carrying a blazing ball of cotton on the end of a bit of wire. It sailed out from his arm to land on the roof of the building near the artery down which their messengers had attempted to go. It blazed feebly for a moment and went out. But a dozen more followed it, blazing, oil-soaked cotton wrapped around a stone. Light things that could be hurled a distance the heavy rocks Carron's men had used could not cover. Three crashed through windows. The feeble blazes grew stronger. Water hissed viciously; for a moment the flame wavered, then grew swiftly brilliant.

Dark figures dropped from windows to dart toward near-by buildings. Four stopped halfway, never to reach their goal, as glow beams found them. The red flower of the flames spread slowly at first; then windows burst in the heat and they grew swiftly. The house on the opposite corner was burning now.

A messenger walked down the alley between the flames to a group of shielded men beyond. They moved away in planned unison when he reached them, the band splitting in two, marching in opposite directions about the square.

Carron stiffened suddenly; his eyes darted sideward toward Grayth's shadowed figure. Grayth, too, was stiffened,

tense. A soft, unreal voice whispered in their minds, a voice and more than a voice, for with it whispered sights and sounds and odors: soft odors of a garden under moonlight, the sounds of men crashing through ruined flower beds, and the thrilling, keening wail of the glow beams. A garden in black and white, scattered with darting figures hurling water pails and rocks at an advancing troop of thirty shielded figures. Deya was watching through a window, with a score of the divisional speakers about her. The troop of Carron's legionnaires were falling back before the concerted assault of a mass of shielded, armed Drunnellians.

"They can't stop them," Grayth muttered.

Carron's voice rumbled unintelligibly. "We didn't."

"Another month—even a week, perhaps—and we might have learned to summon Aesir to aid us. Do you think the Mother knew—that she did this just early enough to prevent us——"

"What can we do now?" Carron demanded. "We might try a mass attack—all of the men swarming at once down on Drunnell and Rendan there——"

"Rendan isn't there," Grayth sighed. "It was he who went to the outer ring to order them. A mass attack would only lead to a thousand deaths for every one we have had to-night. There are nearly five thousand of our friends in those buildings. Somehow they must be released."

SLOWLY, Grayth got to his feet. Deya's thought pictures came so clear to his mind that it seemed almost that he must avoid the old oak which stood by the flagged terrace where he had eaten dinner, and the charging Drunnellians behind their shields. The last of Carron's green-cloaked legionnaires was down. They would not use their glow beams on the speakers; Grayth knew with a ter-

rible certainty that they would not use them on Deya and Thera.

Grayth reached to his forehead and touched the little stud of the crown he had donned. Carron watched him in surprise, started after him as he walked out of the shadow of the tree into the full light of the flames. "Stay there, Carron," Grayth called. Then he was striding across the last of the lawn onto the flagged pavement of the square. He stood still for a moment, as a half-dozen glowing beams lanced toward him, to die soundlessly against the invisible sheath of his crown. The beams stopped. Drunnell stepped toward him, till he stood in the forefront of his little force.

"What terms, Drunnell?" Grayth called. The sheath seemed to drink in his voice, but somehow Drunnell had heard.

Drunnell laughed softly. "And may I ask, why terms? Why should I want terms from you?"

"Because you have no real desire to destroy these men in the buildings." Grayth nodded to the silent watchers in the windows facing the square. "Because you only want to make sure that I do not escape—and because you cannot hold me. We have captured a score or so of these crowns the Mother gave you. With them I, a score or so of my men, Deya, Thera—and a few others—can leave you. We will have time and opportunity then to do something more, perhaps. But certainly I can find my way to safety on this world you cannot ever hope to search, though the Sarn Mother herself should aid you.

Grayth looked at Drunnell steadily, wondering. Drunnell had, of course, no way of knowing how many crowns had been captured intact. One, at least, he knew. And he had no way of knowing that Deya and Thera were even then arguing with a group of shielded men led by Barthun.

"What do you want?" Drunnell spoke

after a moment's silence, broken only by the crackling lap of the flames, the restless creak of ancient houses crowded now with men.

"The men that fought for me go free, every man or woman or child you have surrounded, captured or blockaded. I will surrender to you."

"I do not like your terms." Drunnel laughed. "You cannot escape from this point now; the outer ring of my men would stop you."

Grayth shook his head. "You know better than that. What offer will you make?"

"I will release these men and women of no importance; but I will demand your surrender, and that of Bartel, Caron, and the spokesmen of the districts." Drunnel stood out before his men, his dark eyes flashing, a smile of sweeping satisfaction on his face. "And that is concession enough for what I hold in my hand this night. What fight have you, Grayth? Your men are bottled between my inner center here, and my outer ring. And the fire spreads in between."

"A clever trick your water was, and clever enough that hurling of rocks, but it gains you nothing. I have more sense of realities than you, Grayth. I don't lay humanity open to the anger of the Sarn Mother, and she is just. She appreciates and aids those who aid her."

"Your futile air guns have merely tempted your men into a closing trap. You, who have never seen a book on military strategy, never practiced warfare, hoping to defeat one tutored by the generals of the Sarn! You may be wise enough in working the minds of cattle such as these in my burning pens—but for practical matters your knowledge is nothing."

"Well, what do you say, Grayth? I'll release these men, these dumb followers of a stupid leader—but the leaders must face the Mother."

GRAYTH shook his head. "We are not caught. We are quicksilver under your fingers, escaping as you try to hold us. Bartel you want for personal reasons, personal hatred, as you want me. I will surrender to you if you will swear by the name of the Mother, by Kathal Sargthan herself, that my people, including all others save only myself and Bartel, shall be free and undisturbed. Bartel, I except with his consent—and catch him if you may! You claim your ring tight—"

Drunnel stared at the tall figure of his enemy. Quicksilver under his fingers, to slip through the teeth of his closing trap. Bartel—

"Let Bartel join you, then," he called carelessly. "The sheep will fall apart in squabbles when the goats are gone."

"You swear by the name of the Mother, by Kathal Sargthan, that those who have fought for me shall be free and unmolested, on equal grounds with those who have fought with you and with those who have not fought?"

"By Kathal Sargthan, I swear that." Drunnel nodded.

"By Kathal Sargthan you swear that we shall have trial before the Mother, as the law of the Sarn demands?"

Drunnel laughed, eyes flashing in the light of the flames. "Aye—if you want that so badly, Grayth, you and Bartel shall surrender to me, and together you shall appear before the Mother. And by the Mother's name, I'll have you there at the morning audience, too!"

Bartel's figure merged from the dark entranceway of a building, striding forward to join Grayth. Grayth snapped off the tiny stud of his crown as Drunnel came forward, took it from his head and restored the silver-and-enamel disk of the Mother's slaves. Drunnel took it from his hands, eyes bright, white teeth flashing in an almost friendly smile of triumph. The game was played out; Grayth and Bartel were no longer obstacles in his path to power.



## VI.

THE SARN stood in solidly massed ranks leading up to the high, golden throne of the Sarn Mother. The great hall of audience was quiet, a hush so deep the faint rustle of the atom-flame projectors far above in the lofty dome trickled down to them like the rustle of autumn's falling leaves.

Grayth and Bartel stood side by side before the Mother, their official crimson cloaks stripped from them, draped instead over the tall forms of Drunnel and Rendán standing close behind. A long, slanting ray of morning sunlight stabbed through a window to wash on the crimson cloth, rebounding in reddening glare.

For long minutes the motionless, slitted eyes of the Mother looked into Grayth's calm face. Her line-thin mouth seemed scarcely to move as she spoke. "You told us that the law of the Sarn could not be enforced, and that you were unable to enforce it. Therefore, Grayth, it was my desire that you be removed.

"By the law of the Sarn, the inefficient administrator is worthy of removal, and the rebellious administrator is worthy of death.

"By the common law of the humans, the inefficient are removed, and the treasonous are worthy of death.

"By the law of the Sarn and the law of man, you have earned no appeal to me. Why then do you protest your ancient privilege of appeal to the Mother of laws and justice?"

"By the law of Sarn and human, the inefficient should be removed and the rebellious or treasonous destroyed," Grayth acknowledges. His voice was low and clear, its tones dying slowly in the vast hall. "If these things are proved against me, I am guilty. But no man has accused me of inefficiency, for I am not inefficient in failing to do that which the law forbids me to do. The law of the Sarn forbids that the spokesman of man

be also the commander of the legion, or that he raise a police power for his office. The law of the humans forbids the spokesman of man doing other than offer advice. I have given the Mother advice, as the laws require; the laws of the Sarn cannot be forced onto humanity without destruction. You ordered that I enforce them, yet the law of Sarn and of man forbids my raising the power I must have to do this. Had I done so, I would have rebelled against the law of the Sarn and been traitorous to human law. I did not do so; therein I am not traitorous, nor am I inefficient."

"The word of the Mother is the law of the Sarn." The Sarn Mother's masking, translucent lids slid across her eyes for a moment. "There is no law above it. The decisions of the Mother are the law of the Earth; there is no law above them. You have acted inefficiently, or rebelliously. I find your actions rebellious. The law defines the manner of your death.

"So, also, I find Bartel rebellious. The law defines the manner of your death." The unwinking eyes swung slowly to Bartel and held him for a moment. Then, suddenly, they moved from his face, to look down the long hall of audiences to the great entranceway. The expressionless face remained unchanged, the line-thin slit of her lips did not move. But in the silence the breath whistled softly into her nostrils. Grayth turned slowly to follow the unmoving stare of the Sarn Mother.

IN THE bright radiance of the atom flames, across lancing beams of early sunlight, a vague, amorphous thing moved, a thing of utter blackness. Shifting suggestions of blocky, heavy legs moved it forward. Slowly, in the sunlight and the radiance of the projectors, it seemed to solidify, condensing upon itself. A gigantic, manlike figure looming twelve feet—a figure not in black, but

of blackness, a sheer absence of all vision, a solid shadow of utter night.

As it moved closer in ponderous, soundless strides, the condensation and solidification went on, more clearly the arms, the great legs became visible. A great, featureless head of jet surmounted the heroic figure, a face of eyeless, mouthless, noseless blackness, swirling, moving unsteadily.

And behind it on the great floor, where the formless feet touched, white sprang out, white flowers of frost. Slowly, the figure moved forward, an aura of cold, a faint, whispering wind from unguessed, icy spaces drawing about it, behind it. A stabbing beam of brilliant sunlight struck down from a high window, lanced into it like a great shaft—and vanished. It did not illuminate nor reflect from that figure of blackness.

"Aesir——" Grayth gasped the name, falling back a step.

Thirty feet from the Mother the figure halted, the mighty arms at rest by its sides. The paralyzed Sarn began to stir, a voice broke out in hissing syllables—and quieted. The blackness spoke, spoke not in words, but in thoughts, thoughts that danced and lanced through every mind, human and Sarn alike.

"There is neither justice nor right in your ruling, daughter of the Sarn. Your race and the race of my people are different. You must change that ruling, in the name of the justice you invoke."

The Sarn Mother's hand moved like a flashing serpent's tongue to a tiny stud set in her throne. A pencil of ravening, intolerable fury burst from the carved mouth of the crouching metal beast at her side, a pencil of inconceivable energies that reft the air in its path in screaming, shattered atoms—and died soundless, lightless on the breast of the lord of blackness. From her massed guards a thousand tongues of death shrieked out, ravening rods of annihilation—that died unseen in his blackness.

From the plaque above the throne of the Sarn Mother a roaring column of the atomic blast, a force designed to wash down mountains, vomited forth, drowning in colossal thunders the pricking bubbles of the lesser rays. No spark of light, no faintest sight of illumination appeared on the motionless giant.

THE shouting voice of the rays died out, stopped, and their echoes wandered lonely in the vast silence of the hall. The blackness spoke again, in a soundless voice that seemed to echo like a vast organ's song, yet lacked all quality of sound.

"I am not matter, nor of forces such as your beams, your rays can touch, daughter of the Sarn. Your wisdom, the ancient powers of your race are useless. You are still but one; I am all of mankind that has ever been, the fifteen hundred billions who have died since the first man. I am the billions you slaughtered at the Conquest. Ten thousand generations of mankind have willed, dreamed and struggled for success and freedom. I am the crystallization of those wills, those dreams. I am mankind, an incarnate ideal half formed. No force, no ray, no thing of matter can influence my being.

"All space was saturated with the deathless energies of forgotten strivers, the eternal wills of all man's myriads since the lost beginning of time. In glacial epoch I died under rending tiger's claws, yet lived in the child protected by that sacrifice. I died while the world was young—and I died last night under the rays you gave these men, and with the leaden shot of the air guns in me.

"I am the wills of mankind, raised into substance by your own acts, daughter of the Sarn. Three billions died at the Conquest, and their wills released to eternal space carried one single thought: to save Earth from your slavery. They were the crystallizing point, on that heart and nucleus the space-ranging wills of

unremembered generations have united into me. Four thousand years have passed, and slowly I have grown, till my powers made contact with Earth's space and time last night, when once again wills and minds went from Earth in striving for freedom.

"I am Aesir, the pantheon of mankind, and mankind itself. All that ever died, under blazing desert sun or in freezing arctic waste, when the first dim stirrings of mind arose and struggled with a tool, and through all time to the will that became of me while I spoke here—the will of one wounded last night and dying this morning.

"For whatever cause they strove and died, they are of me, daughter of the Sarn. Mankind must have justice, for each of those who died sought in his own way for what his mind believed was truth. Grayth and Bartel have striven that justice might be, and they shall go on with their works.

"Drunnel and Rendán have sought to sell mankind for their own ends. They, too, shall have justice."

The vast blackness of his arm reached out and a formless finger of jet touched once on Drunnel's forehead for a fraction of a second, before it passed to Rendán's terror-frozen countenance. Slowly, Drunnel swayed, his legs loosened and he fell to the floor as a soft, white blanket spread over his face. His

head clicked like brittle metal on the black basalt of the floor. Like dropped ice it shivered in a dozen fragments. Kindly, swift-spreading, white frost crystals softened and concealed it, and the broken skull of Rendán.

**AESIR TURNED.** Before him a lane opened as the Sarn stumbled back, making a way that lead him straight to the vast gold-flecked wall of the hall of audiences, polished slabs of jade-green stone. Silently, Aesir stepped into it; the solid matter misted and vanished at his touch, opening to the empty corridor beyond. For a moment it remained so, the vast, black figure striding soundless down the deserted corridor beyond the wall—then the wall closed in behind him. But it was black, black with the blackness of Aesir himself.

A guard turned on it a stabbing beam that crushed the atoms of a rising column into sparkling dust. But the blackness of the wall remained, untouched, unlighted. The beam died, and very slowly, before their eyes, the blackness faded from the wall, evaporating in little curling wisps of jet fog. For a moment, a distorted profile remained, a vast, black shadow of a man thrown on green stone.

Then only green polished stone glowed in the warm light of the rising sun.

The Mother's expressionless eyes looked into Grayth's for long, silent sec-



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onds. The Sarn shifted restlessly, little whisperings of a rising sound. "You shall both go, Grayth and Bartel, and see that order is restored in the human city." The Sarn Mother's voice halted for a moment, then continued, "At the hour of sunset of this day all the weapons and crowns I allowed to leave my arsenal will be returned to me.

"The law of the one and the five shall not apply to humans."

The Mother's eyes closed. Grayth and Bartel turned and walked silently down the long aisle between ranks of silent Sarn. Behind them followed the six, silent men who had come that morning with Drunnel and Rendan. Outside the great entranceway, the six went hastily away across the green lawn. For a moment Grayth and Bartel stood alone.

AN electrotechnician, a man so commonly seen working about the Sarn city that few noticed him, joined them there. In one hand he carried a large, snap-locked bag, a somewhat large kit, containing, no doubt, the tools, the instruments and delicate bits of apparatus of his trade. In the other hand he carried a pair of stiltlike things of light metal tubing, things that ended with a curious webbing that resembled broad, splayed feet.

"I had the luck of the gods," said Ware softly. "It was perfectly impossible to complete the thing in the time that——"

"Yes," said Grayth with a chuckle that was half a sigh, "we had the luck of the gods, too."



DON'T MISS THE POWERFUL NEW NOVEL

By Arthur J. Burks

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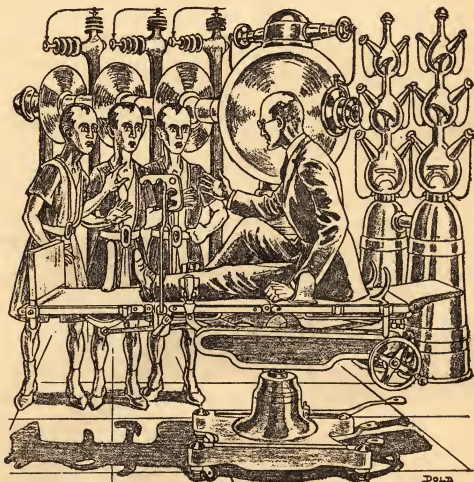
# The Golden Horseshoe

A SCIENCE STORY OF THE PHENOMENA  
IN NATIONAL STONE PARK



# MR. ELLERBEE TRANSPLANTED

by JAN FORMAN



**M**R. ELLERBEE detested expositions—ever since the day he had met his wife at one, thirty-two interminable years ago.

Mr. Ellerbee, in fact, hated expositions, and this particular one above all others. There were blaring radios,

hideously cacophonous, and seething crowds, milling and heaving, hot and sweating, and the nauseating smell of roasted popcorn, outdone in beastliness only by the unutterable stench of sizzling hamburgers and hot dogs.

Already he had walked the best part

of six miles along the sun-scorched asphalt, praising this, condemning that, admiring such-and-such, and criticizing so-and-so. And even though, after only two years of married life, Mr. Ellerbee had found a way to simulate an interest in the varied goings on around him, to the satisfaction of his wife, he was becoming quite fed up and weary with the day.

Not only was he tired, not only was it hot, not only did his feet ache, but he thought that he was ill, and angry, too. Perhaps the last batch of hateful roller-coaster rides, accompanying his flushed and shrilly screaming wife—she had a passion for roller coasters—had indeed upset his stomach. Or perhaps it had been the stifling heat at the dress parade his wife had made him sit through, possibly pleasant enough if he had been nearer to the models. Or perhaps he was irked at his wife's attitude toward his suggestion that they go and visit Mlle. Sonia, who danced sensationally in the midway.

But now there was respite. For a brief and all too fleeting moment his wife was nonexistent, having retired to fix a shoe buckle which had given way under her enthusiastic promenading. Mr. Ellerbee stood ruminating, holding his hat in his hand and wiping the sweat from his nearly bald head with a large crimson handkerchief. And now, suddenly, his mind was made up. Very well, then, he would go and see this Mlle. Sonia. And he sincerely hoped this dereliction would goad his wife. Frightened by this last thought he hurriedly put his hat back on his head and ducked into the crowd.

As he headed in the general direction of the midway, his spirit slowly ebbed. True, there was the midway, with its glamour, the raucous voices of its barkers, and the shrill confusion of its music; but afterward there would be questions, cross-examinations, there would be

anger and recriminations, and, above all, his tearful wife in agonies of martyrdom and deep self-pity. Better to return, better to put temptation far away. But already in his mind's eye he could see her sweeping out of the rest room, looking for him, and finding not a trace of him; he could see her mouth harden into the familiar thin line, and the cold, glittering look come into her eyes; and he knew it was much too late to retrace his steps. In for a penny, in for a pound, thought Mr. Ellerbee, furtively advancing in the direction of Mlle. Sonia.

But when he got to where she danced, the very blatancy of the posters, the crudity of the barker—he was a plain man, who achieved a great deal of pleasure in calling a spade a spade—and the amused looks of the other men, clustering excitedly around, only tended to unnerve him. His throat was dry and the blood was racing in his ears. He could hear his heart doing the most peculiar things. These things, thought Mr. Ellerbee, must be taken slowly. He stood for a while, looking slyly at the posters—were women ever built like that?—and listening to the barker's spiel, a delicious sense of guilt making him tremble and sweat even more profusely than before. But his nerve failed him and he walked away. In a few moments he would be back. And then——

SUDDENLY, his eye was taken with the gayly painted sign that hung above a doorway in a hoarding, and the quaint dress of the person at the entrance. "City of the Future" the sign read, and the man was dressed in a sort of tunic, painted to resemble metal. Over the top of the hoarding Mr. Ellerbee could get a tantalizing glimpse of chromium turrets and copper cupolas, glinting in the sun. After all, thought Mr. Ellerbee, it might even be instructive. And it was really very innocent. There would be plenty of time later for Mlle.

Sonia. So he paid his quarter and in he went.

The City of the Future occupied about an acre of the grounds, and was thought to be the star turn in all the exposition. Not only had newspapers the world over duly reported all its wonders to an avid and gaping public, but the news reels had shown its quaintly gleaming artificiality on every screen as well. It had been televised, a fitting subject for the opening of the new television service recently inaugurated. Furthermore, it had even been utilized to point the moral in a speech on uplift, given by a great dictator.

On entering, Mr. Ellerbee was fascinated with the view. A long street stretched down the whole length of the city, passing on its way through a great square, from the center of which there rose an enormous glass and copper tower, the Power Tower, easily recognizable by Mr. Ellerbee from the cinema the week before. On each side of the street the terraced houses were massed, some gleaming white, some glass, crystal-clear, and tinted with a multitude of colors, great balustrades of chromium and sheets of polished copper. Here there were brilliant flowers, red and flame, all of metal foil and glass, and great palms, a wonderful eruption of jagged aluminium. There ran the smoothly rubbered surface of the street, with the small, gayly painted, metal cars gliding over its surface, silently and fast.

Mr. Ellerbee did the city thoroughly. He saw the latest houses, with their strange fabrics and mysterious lighting, pale soft glows that sprang from nowhere, their labor-saving luxuries, all electric, fascinating and desirable. He noted with delight the clean lines of the decorations, the pastel shades of the walls, and even the smooth curves of the scantily dressed girl, who showed him round.

He saw the landing roofs on top of the buildings, wondered at the softly

humming gyroplanes that stood as if in readiness for flight, and marveled at the "Mars Express," a triumph of the scene-designer's art, with all its futuristic gadgets, its stellar map and trim officers.

He visited the television theater—only, however, seeing a recent news reel, and indistinctly too—and thence on to the Palace of Arts—really quite as good, if not better than, Mlle. Sonia—thence in a rocketing lift to the dizzy heights of the lofty Power Tower, where the great generators were pouring out their power for all the city. Here, too, were actual radio and television broadcasting stations, operating on the yellow network. Recklessly, Mr. Ellerbee spent a dollar to be present at a broadcast, thinking of his voice and sallow countenance leaping out through all of space.

AFTER THIS, he wandered into a room, not noticing it was marked "Private," and was delighted with the futuristic effect of the furniture there. It seemed to be a kind of office, with peculiar metal chairs, a chromium-topped desk that slanted like an architect's board, and copper pictures on the wall. He gingerly opened a door on the far side of the room, hoping to see further marvels, but was vaguely disappointed.

The second room contained only a collection of machinery, oddly incased to carry out the general bizarre effect, and Mr. Ellerbee strolled to an open window. At least the view from this height would be interesting. Giddily, he gazed down upon the city, bright from sunshine flashing from roofs and domes.

He was captivated.

Conscious only of the strange beauty of the place, and the low throbbing of the power generators, he forgot the minutes. Even the sun, hotter now than ever, seemed dim and not unpleasant. Swiftly, his mind flowed here and there, now caught by the glinting copper and

chromium, now by the tremendous height of the tower, now swayed by the banners in the streets below, lulled by the all-pervading hum into a strange awareness of the city. Gone were the crowds, gone were his worries, gone, gone, gone—

Suddenly, Mr. Ellerbee felt strangely chill. Startled, he remembered that Louisa was waiting for him. He rushed into the other room and then out into the vast public hall again. The hall was deserted, save for the metal-clad attendant at the elevator. With approaching panic, Mr. Ellerbee wondered what on earth had happened. Maybe it was very late, the exposition closed.

He hurried over to the elevator. The attendant eyed him most peculiarly, he thought, but then saluted sharply. He entered and they fell like a plummet. When he emerged the attendants on the entrance all came to attention and saluted him. Mr. Ellerbee was touched by this attention, and the good organization of the place, knowing from long experience with expositions that this was often sadly lacking.

Fled were all thoughts of Mlle Sonia. The panic he had received upon the tower had cooled his erstwhile ardor. Now the best thing to do was to get back to the hotel as soon as possible and explain the whole escapade to his wife. So, grasping his hat firmly, he started down the main street at a trot. After a while he became conscious of the stares of people as he ran. But then he noticed that, after all, they were only attendants, dressed as they were in their queer metallic tunics.

Then other things began to worry him. First, he noticed that all the other visitors had gone; he alone of all the crowd was the only person rightly dressed, the only visitor in all the show. Then he heard a humming sound, and nearly stumbled when he saw one of the squat, fantastic-looking gyroplanes, sailing a few hundred feet overhead.

There was something very strange about it all, thought Mr. Ellerbee, hurrying toward the exit as fast as his legs could carry him.

IT SEEMED a long way, longer than he imagined. Even after ten minutes the exit was not reached. The place, too, was unfamiliar. Surely over there was another tower, and there wide avenues stretching out as far as the eye could see. Panic and fear were mounting rapidly in Mr. Ellerbee. Something most unusual was occurring, and he remembered how he had felt one night when, as a small child, he had lost his way at the bottom of his bed, and had been unable to find his way out until his mother had come running on the scene, attracted by his screams. Although in such a small place it was undeniably stupid, he must have lost his way, he thought.

He approached a tall attendant: "Please," said Mr. Ellerbee, "where is the way out?"

The tall man looked him up and down, with rather a puzzled stare, then walked on without a word. Mr. Ellerbee was surprised at this lack of courtesy on the part of one of the attendants.

He addressed another, slowly and clearly: "I think I've lost myself. Can you please tell me where I can find the exit?" The man took one look at him and then burst out laughing; calling to a companion he said something to him that was inaudible, and then indicated Mr. Ellerbee's spectacles. Then both of them held their sides and went into paroxysms of laughter. Mr. Ellerbee was furious. Suddenly he was overwhelmed by the rudeness of it all. He screamed at them. He leaped toward them, waving his arms. Immediately they stopped laughing; a strange, startled look came into their eyes, and they turned and ran down the street.

By this time quite a crowd of at-

tendants had collected. All of them were smiling and pointing at Mr. Ellerbee and whispering among themselves. Mr. Ellerbee's rage rose high and boiled over. This was too much! This was intolerable! Even though the country was going to the dogs, even though the forces of Bolshevism stalked the land, there was utterly no need for these attendants to behave so rudely.

"Where," he screamed, "is the way out? Exit! Will some one have the decency to show me the way out? I want to leave. Can you understand, you idiots? Really, this is more than I can stand!"

Suddenly an older man, wearing a short crimson cloak thrown over the metallic tunic, stepped quietly forward and took Mr. Ellerbee by the arm. At last, thought Mr. Ellerbee, an inspector or some one; now we shall soon be out of here. And already in his mind he was visualizing just the right sort of stinging letter to be written for the papers.

Mr. Ellerbee's guide plunged into quite a maze of streets. Twice Mr. Ellerbee could have sworn they had crossed the main avenue, and after about eight minutes of wandering around, his suspicions became a certainty. His guide was having a joke at his expense. Not only that, but he was decidedly uneasy. There was a large crowd following them, pointing and gesticulating. The whole atmosphere seemed changed, seemed almost sinister.

Suddenly they came to a stop. In front of them stood a low, squat building, marble and ornately decorated. Towering from the roof, the flaming arms of a gigantic neon cross cast a scarlet glow over everything. The guide pointed. Traced in brilliant blue lettering Mr. Ellerbee read:

EUTHANATIKIN.

Dainty Deaths by Painless Process.  
Deaths and Comas by Appointment.

For a moment Mr. Ellerbee stared at the letters, wondering if he had suddenly gone mad. The next instant he was furious. A joke was a joke, but this was carrying it too far. Somebody was going to pay for this. There would be trouble, plenty of it. The sight of his smiling guide made him see red. With a bitter yell he advanced upon the man, flailing his fists furiously.

The man screamed and bolted into the crowd.

His quarry lost, Mr. Ellerbee, still mad with rage, turned upon the crowd, hitting wildly. The crowd melted before him, and almost before he was aware of what had happened, he found himself sitting on the rubber surface of the roadway. He caught a glimpse of the crowd, agitated, and hurrying away in all directions. Still angry, he was picking himself up when he saw one of the swift cars bearing down upon him. He tried to cry out. He waved his arms. He tried to fling himself clear, but it was useless. He had just time to see the startled face of the driver, and the blunt metal nose of the car above him. Then something hit him and all was blackness.

AFTER a very long while the throbbing seemed to cease. Faintly, very faintly, figures seemed to pass in front of him. Occasionally one of them would pause and seem to peer down at him. Gradually things became more definite. The sense of smell was coming back, bringing with it the sharp tang of ozone. Then sound. There was a continual buzzing, as though a bluebottle was flying round inside his brain. Then there were voices. Later he could even distinguish individual faces.

After waiting for an almost infinite time it seemed that a brilliant, golden light flashed across his consciousness, and his senses seemed to melt and flow together.



Suddenly, without any effort whatsoever, Mr. Ellerbee sat up. He had instantly become fully conscious. He was sitting upright on a species of bed that he recognized as an operating table, situated in the middle of a large room, full of strange humming machines and glowing lights. In front of him stood three men, identical in height, all clothed in purple tunics. Mr. Ellerbee did the first thing that came into his head. He leaned forward to shake hands. The three men shrank back, and one of them called out. Two others entered, carrying some sort of weapons, not unlike miniature rifles, noticed Mr. Ellerbee.

"How do you do?" said Mr. Ellerbee, pleasantly. "I'm so sorry I gave you all this trouble by getting knocked down. I'm afraid it was all my fault, you know. I do hope I haven't inconvenienced you." The three men stood silent. "Anyhow," went on Mr. Ellerbee, cheerfully, "perhaps I can go now, for I feel perfectly all right, except for this arm, which I see is bandaged. You see, I'm staying at the hotel and my wife'll be anxious to know what's become of me."

The three men stood looking at him, saying nothing.

Then one of them, after much thought, said rather tonelessly: "Be quiet. You are under arrest."

"Upon my word," said Mr. Ellerbee, "this is altogether too much." His voice was icy-cold. "And why do I find myself arrested?"

But the men remained silent.

"Will you answer?" he stormed, waving his forearm at them.

The two guards leveled their weapons at him.

"All right," said Mr. Ellerbee wearily, "you might at least tell me where I am."

Then the spokesman said again,

slowly, jerkily: "Criminal detention ward, Third City."

After that they all went out.

THE NEXT TIME the door opened a new man, taller than the others, and bearing the stamp of authority, entered. He, too, was clothed in a purple tunic, but he carried a large silver, many-pointed star upon his breast. He was armed, carrying some small weapon that he fingered nervously, keeping an eye on Mr. Ellerbee all the time.

"Name?" he snapped out.

"Alan Ellerbee," said Mr. Ellerbee, meekly.

The man shook his head. "Residence?"

"Jersey City."

The man looked coldly at Mr. Ellerbee. "Really," he said, "it would be much better if you didn't play. Come, now, where do you live?"

"Why," said Mr. Ellerbee, beginning to get exasperated, "I've just this minute told you. Jersey City."

"Listen," said the man. "You evidently seem bent on making difficulties. Who ever heard of Jersey City. You'd better tell that to the judge."

"Nonsense!" said Mr. Ellerbee, really stung. "Lots of people have heard of Jersey City, I tell you. And a very fine place it is, too. I live there. My father lived there and my grandfather before him. I have a wife and two children living in Jersey City and I'm proud to be a citizen. Let me tell you, this is going to get you all into plenty of trouble."

The man beckoned to the two guards who had been hovering near the door. They came forward and took hold of Mr. Ellerbee. The man looked at Mr. Ellerbee with utter loathing, with supreme disgust.

"You actually had a father? And a grandfather?"

"Why, certainly," said Mr. Ellerbee, puzzled.

The man was blushing. "This is shocking!" he muttered. Then to the guards: "Take the fellow away!"

The two guards led Mr. Ellerbee along many corridors, many of them beautiful, all filled with a soft radiance. They led him up long, inclined ramps, through vast halls, round a bewildering array of corners. Finally, they approached a massive, ten-foot door that swung open, revealing an enormous hall, larger than any of the ones they had passed through, and packed with people, disappearing into the dim distance.

Mr. Ellerbee was ushered into a small stand. A man placed a midget microphone to the lapel of his coat. Another man fixed a coil of wire around his wrist. Everything was smooth, without a hitch. Everything was ready almost before he could comprehend that he was in court. Above him he could see a platform and three seated men, clothed in flowing golden robes. Then a bright beam of light was flashed into his eyes and he was temporarily blinded.

A TREMENDOUS VOICE addressed him, apparently from a loud-speaker: "Name?"

"A. Ellerbee. Alan Ellerbee," he replied, and ducked as he heard his voice go echoing round the hall from the giant loud-speakers.

"Residence?"

"The President Apartments, on Fifty-second Street, Jersey City, State of New Jersey, U. S. A.," said Mr. Ellerbee, very loudly, very blandly.

He could hear the titters that went up.

The stony voice of his interrogator went on: "This is no time for joking, Ellerbee. Where are you registered, what is your rank, and what is your number?"

"Look," said Mr. Ellerbee, patiently, "I am not, I suppose, in a position to argue with you, whoever you are, but

I have no number. I have no rank. I am plain Mr. Ellerbee and I own a garage in Jersey City."

"The man must be mad!" said one of the judges in a loud stage whisper.

"Very well," said the first interrogator, "we'll drop the matter for the moment."

"Listen!" said Mr. Ellerbee.

But some one at his side said: "Shush!"

"Read the charges," thundered the judge.

A voice rolled out over the crowd.

Mr. Ellerbee listened, amazed. He learned that he had criminally assaulted a guide, Rank 4, No. 22855, of Third City; that he had further criminally assaulted a mixed crowd of citizens of Third City, injuring and maiming at least five; that he had intentionally and feloniously attempted to cause to be wrecked a general transport car; that he had failed to comply with Regulations 2, 3, 4, 5, 7 and 10 of the Dress Committee; that he was a vagrant; that his manner and deportment was subversive to the State; that he was a spy, and a dangerous one at that, being deeply atavistic.

"A very terrible fellow indeed!" interposed one of the judges.

"Finally," went on the prosecutor, "the prisoner is charged with criminal indecency."

There was a shocked silence.

Then the voice of the judge boomed out: "Have you anything to say, Prisoner Ellerbee?"

"Plenty!" shouted Mr. Ellerbee.

"One moment!" hastily interrupted the judge. "The exact details of the last charge have just been conveyed to me. Owing to the sordid filth"—here he glared at Mr. Ellerbee—"of these unsavory details, I regret that I shall be obliged to clear the court."

After a while the hubbub subsided and there was comparative quiet once more.

Then the judge said, speaking in a voice of thunder to Mr. Ellerbee: "Let us deal with the charges, one by one. You are accused firstly with a criminal assault upon one of the city guides. Is there anything that you can put forward in your defense? Is there any mitigating circumstance for such a dastardly attack?"

Mr. Ellerbee was utterly abashed. "Your honor——" he began.

"What!" shouted the judge angrily. "I am not your honor. I am nothing whatsoever to do with you. I am a judge."

"VERY WELL," said Mr. Ellerbee wearily. "Let me explain. I went to the exposition with my wife, Louisa Ellerbee. It was very hot and while she left me for a moment I decided to visit certain of the exhibits, notably one called the City of the Future. When I was on top of the Power Tower I believe I must have stayed longer than I was aware, for I found, on coming out of my brown study, that all the other visitors had departed. So I decided to return home to my hotel, but lost my way. I asked one of the attendants to show me the way, but he played a joke on me and brought me to place called the Euthanatikon.

"Naturally, I was very incensed and tried to hit the man, but he ran away. I'll admit I lost my temper and tried to vent my fury on the crowd; but all that happened was that I got run over by a taxi. The next thing I knew was that I found myself in some sort of a hospital under arrest, and here I am——" He paused expectantly.

There followed a lengthy conference among the three judges.

Finally, the spokesman arose and addressed Mr. Ellerbee: "Before we are able to make any statement regarding your extraordinary declaration, there are certain terms, certain words that you have no doubt unwittingly used, the

meaning of which we fail to grasp. To wit: Exposition. What is an exposition?"

Mr. Ellerbee gasped in amazement. Even judges should know a simple thing like that. "Why," said Mr. Ellerbee, temporarily at a loss, "an exposition is a sort of fair—a place where all the latest progress in art and science is exhibited—a place where—where they have fan dancers and roller coasters and hot dogs and exhibits like this City of the Future that I'm telling you about. People pay to visit. Do you understand?"

"Not one word," said the judge. "You are obviously mad. However, there are other points we would like clear. You mentioned, I think, the term wife. What, exactly is your wife?"

Here one of the other judges interrupted: "I think I'm right in believing it to be a most archaic term for a woman who cohabits with a man."

"Ah! I see," said the first judge. Then to Mr. Ellerbee: "Did you only have one woman?"

"Naturally," responded Mr. Ellerbee, shocked.

"Most unnaturally, I should have thought," said the judge acidly. "However, let us proceed. You mention that you found yourself on the Power Tower, a charge, a very serious charge, that, I hasten to point out, the prosecutor has apparently overlooked. That alone is sufficient reason for your condemnation. Are you not aware that the Power Tower is forbidden ground? Were you never taught, I might ask, were it not so ridiculous, that it was forbidden to ascend the Tower?"

"No," said Mr. Ellerbee sullenly. He was getting to the end of his tether.

"Then where have you been educated?" roared the judge.

"Columbia, New York City."

"That is enough. You are utterly mad. New York, indeed! And where, might I ask, is that?"

"Listen," said Mr. Ellerbe quietly. "Maybe I am mad. I'm beginning to think so myself. Maybe there is no New York, but a few hours ago New York was the biggest city in the world. New York is over the Hudson from Jersey City. In New York there is a large university called Columbia. I was educated there. I got a degree there. I know nothing about your Power Tower. I live in Jersey City. My children live there, too. And my father lived there before me; so did my grandfather——"

"What!" cried the judges. "Your children! Your father! Your grandfather! Oh! This is too shameful, too degrading!"

"I had no idea whatsoever," said the first judge, "that the case was quite as sordid as it is. However, we must proceed. Why did you assault the guide, who was dutifully showing you the way out?"

"But that's where all the trouble started," sobbed Mr. Ellerbe. "He didn't show me the way out. He showed me a silly joke called Euthanatikon. Deaths and comas by appointment or some such silly thing."

"Well," said the judge, in the tone of one humoring a small child, "isn't that the way out?"

FOR the first time in his life Mr. Ellerbe was absolutely and completely dumfounded, utterly without a reply.

"As for your attempted wreck of the transport," continued the judge, "that is relatively unimportant; so, also, the charge relating to your extraordinary costume; so, too, the charge of vagrancy, since these appear to be concomitant to a person bereft of his senses such as you appear to me.

"But there follow more serious charges. Subversiveness and espionage. You have admitted before the court, is it not so, that you visited the top of the Power Tower? And that peculiar struc-

ture that you persist in wearing in front of your eyes is, I presume, some subtle machine for the furtherment of your espionage, that no doubt sooner or later will reveal its secret to us. Is this not a fact?"

"No," said Mr. Ellerbe stubbornly. "They are ordinary glasses. I'm not able to see very well without them."

"Rubbish!" said the judge. "Everybody can see perfectly well. Hand them to me. It is a well-known fact that many of these apparently simple, shall I say, appliances are, in reality, articles of diabolical ingenuity," said the judge sententiously.

Mr. Ellerbe surrendered his glasses with a gesture of complete bafflement.

"And now," began the judge ominously, "we come to the most heinous of the charges—Atavism"—here he paused to let the enormity of the charge sink in—"and criminal indecency. Let us deal with atavism first. There can be no excuse, however mitigating, for the crime of atavism. We, nowadays, are no longer subject to the vices and ills our ancestors were pregnant with. Due—and though I have said it before, I shall repeat it—to the brilliance of our modern science of embryology and conditioned birth we are no longer slaves to the baser instincts that used to haunt the soul of man. Temper, and violence, brute passions such as these, are degrading in their bestiality. Without the slightest shadow of a doubt these traits have risen in your soul, bearing fruit in evil fashion. You are no longer worthy of the name of man!"

Mr. Ellerbe felt very small indeed.

"And now," intoned the judge, "we proceed to the charge of criminal indecency." His voice was cosmic. "The first, if I may say so, for eighteen hundred years. You are understood to have admitted, though on such a serious charge as this we cannot be too sure, that there was a man whom you called your grandfather. This man, I believe,

had relations with a woman in such a way that an offspring was produced. This, I believe, is so, although I am not fully conversant with the term grandfather."

"Why, yes," said Mr. Ellerbee.

"This offspring—called, so I am informed, a son—then repeated the process and in due course created you! Is that not so?"

"Well, I imagine so," said Mr. Ellerbee.

"FURTHER, I take it that you have the audacity, the subversiveness, the criminality, the beastiality to cause a woman to bear what you call your children?"

"Certainly," said Mr. Ellerbee.

"Do you mean to tell me," went on the judge, "that these offspring were produced without the consent of the State, were produced other than in the State reproduction centers, that you actually committed the crime of having children by your own woman?"

"What else could I have done, then?" queried Mr. Ellerbee.

"Oh!" said the third judge. "This is terrible."

"Send him away," said the second judge. "I can hardly bear to hear more of this filthy and degrading confession."

"Very well," said the first judge, who was more hardened to cases of that sort. "The court finds you guilty on all of the charges, but especially guilty of possessing a nature so evil, so obdurate, so utterly worthless and atavistic that it is no longer possible for you to be classed as a member of the human race. Therefore, the sentence, mitigated to a slight degree, owing to the fact that you are insane—due, no doubt, partly to the haphazard and terrible method of your procreation—is that you be allotted to the First College of Science for whatsoever experimental purposes shall be thought fit. It is spoken." Then to the guards: "Take him away!"

So much had happened to Mr. Ellerbee during the last forty-eight hours that he was numb. Nothing mattered any more, neither the pain nor the fear. Even his memory was slowly fading from his consciousness. He barely remembered being dragged out of the courtroom, the terrifying journey in the rocket plane, halfway round the earth it seemed, the cold wastes that surrounded the tall towers of the First City, the grim buildings of the First College of Science, the humiliating tests, the countless pricks of hypodermics, the strange rays that made him reel and faint. Even the incredible sight of seeing all his entrails spread out along a table was fading into the growing haze of his subconscious.

Now there was gradually enveloping oblivion. Somewhere a machine purred, and the angry crackle of sparks could be heard, cutting across all other noises. There was a faint, sickly smell; it might have been anything: warm blood, chloroform, burning rubber. Somewhere a light kept flashing. All that he was aware of was that a very important experiment was being performed upon his body, since when he had been led into the operating theater the vast size of the crowd in the gallery, the complexity of the gleaming tubes and coils and strange machinery, and the silent bustle of the masked figures had all denoted a major event.

Suddenly, the note of the machine changed and rose to a shrill whine. A great light shone in his eyes and he had a momentary glimpse, as though from a great height, of the packed operating theater, and masked figures reeling away from the operating table, which was empty now, and glowing in a strange fashion. Then darkness obliterated everything.

LATER, after much time, he opened his eyes. Or rather he suddenly found himself lying on his back in a plowed



field. Carefully, he felt himself to see if any part of him was missing, to see if any bones were broken. But, except for being bruised and aching intolerably, and having his right arm in a bandage, all seemed well. He got up and slowly looked about him. He reeled and almost fell, and his head throbbed violently. After a while he felt better. He tried to walk a few steps, but had to sit down, feeling violently sick.

Suddenly his mind seemed to clear. He stood up. There in the distance was the haze and smoke of a big city, there were its skyscrapers, and there, thought Mr. Ellerbee, were the towers and flags of the exposition. Gradually, his memory returned; the exposition, the tower, the awful city of the future, the court, the terrible experiments. Tremblingly, he started walking toward the road, where a steady stream of cars went flashing by.

In the lobby of the hotel Mr. Ellerbee bought a paper, hoping this bit of routine would steady his nerves. But the way the clerk stared only increased his misery, and as he crept toward the elevators he felt a hundred eyes taking in his bedraggled appearance, his torn clothes, dirty from the field and splotted with blood, and his growth of beard.

In the elevator he was acutely conscious of the operator's scorn, and held up the paper, pretending to read it but

interested merely in hiding his face. After a moment he really did begin reading, for a certain heading had captured his gaze:

**"SCIENTIST" HELD AFTER TAMPERING WITH EXPOSITION MACHINERY**

Mr. Ellerbee gulped in the words that followed. His eyes bulged, perspiration leaped to his forehead; his heart did funny things. Then a strange, paralyzing calm settled over him. By the time the car came to a stop at his floor, the thirtieth, all his fears were gone, and in their place rested an awe that he dared not yet analyze.

Reluctantly, he knocked at the door of his suite. What would Louisa say? Would she believe him?

OUT came Mrs. Ellerbee, all smiles. For a moment she continued to smile a sort of questioning semiwelcome. Then she looked puzzled. Then her face froze.

"Why, Mr. Ellerbee——" she began.

"Yes, dear," said Mr. Ellerbee, rather weakly, "I'm back."

"And so I should think!" his wife replied. "And where have you been all this time, I should like to know. Drinking, I suppose. Oh, you wretch! You good-for-nothing bully, you, you wretch!"

"Listen," said Mr. Ellerbee, "I want



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to tell you I've had a most extraordinary time. Some very peculiar things have happened to me."

"That," said his wife, "is obvious. From your state I should think you'd been in at least a dozen barroom brawls."

"Nothing of the sort!" snapped Mr. Ellerbee. "I was transplanted to the future. And I've just got back. I landed in a field beyond the city."

"Why, Mr. Ellerbee," cried his wife, looking at him in horror, "you're drunk! Oh, the cruelty of it, leaving me alone and unprotected, worrying for you all this time. And then to come back drunk!"

"I tell you, I went into the future. They did awful things to me. I was knocked down by a car, and arrested and tried. I traveled in a rocket plane to a city at the North or South Pole, and all the people wore metal clothes, and there was a place where you could be put to death if you wanted it. They even——"

"You expect me to believe that, you little worm!" screamed his wife. "You have the audacity to stand there in your cups, telling me, Louisa Ellerbee, the most awful pack of lies that even your drink-befuddled barroom friends wouldn't believe. Oh, you wicked liar!"

"But I was," insisted Mr. Ellerbee. "I have; I did; I tell you, Louisa, I was transplanted."

"If you say that once again, I'll have you locked up for lunacy," stormed his

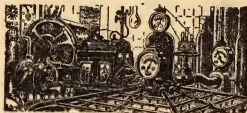
wife. "You're drinking mad, that's what you are."

"Oh, very well," said Mr. Ellerbee.

He glanced once more at his newspaper, where a front-page item had informed him of the incredible truth. How, to begin with, a certain 'scientist' had persuaded the exposition people to let him install in the Tower a Future Chamber, containing a collection of fake machinery of the type which some day might actually be invented to transport human beings into distant ages. The officials thought it would be a novelty for the public. Then they discovered the man was mad, actually believing his apparatus would work. Permitting him a final demonstration that failed utterly, they promptly locked up the chamber and kicked the man out, preferring to forget the whole thing.

To-day the scientist had secretly returned and gained access to the power plant, where he meddled with the huge generators. Caught, he confessed his purpose was to furnish "more juice for the Future Chamber," claiming that his recent calculations proved that this was all it required to make it function. And thus the whole story became public.

Mr. Ellerbee sighed and dropped the paper in a wastebasket. What was the good of telling Louisa how he had blundered into the Future Chamber and propitiously borne out the correctness of that fellow's recent calculations? It would only start another argument, and besides Mr. Ellerbee wanted to brush his teeth.





*Hypnotism— A great tongue—like a razor strop—  
licked Shimada's hair carelessly—*

# RULE of the BEE

by Manly Wade Wellman

**D**R. GEIGER, that plump little eccentric, rounded his bearded lips to puff, then mopped his brow. Outside, the sun crackled on the grass. He dipped his pen in ink and began to scrawl:

July 10th—Selected specimen of *apis mellifera*, or common honey bee—healthy young worker. Used GG-ray camera, fueled with chemical mixture as de-

scribed July 9th; all elements found in living animal matter. After one hour under ray, full strength, specimen measured—

He flung down the pen. "I never could write a report," he complained aloud, and turned from the desk.

The room, once the parlor of the farmhouse, was whitewashed throughout and lined with shelves of laboratory

vessels and supplies. In its center stood a glass-and-metal structure, in appearance half cream separator, half magic lantern. From a frosted lens poured a bright-green ray, directed at a slant into a wooden soap box. At either side of this box knelt Dr. Geiger's servants—a brawny Negro and a compact little Japanese.

"Shimada! Luther!" growled the doctor.

Their sweat-beaded faces, black and yellow, bobbed up to listen. "The experiment goes well," volunteered the Oriental in his precise, nasal voice. "Size increases as you watch."

"Finish this report for me, Shimada," directed his employer. "Say that the chemicals consumed as the ray burns approximate in weight the weight increase of our specimen." Rising, he walked to the machine and switched off the ray. Then he peered into the box.

At first glance it seemed to contain one of the insect models so often seen in museums—a jointed, glossy thing six inches long and nearly half as tall. But it moved and lived, raised its head with shining eyes like quarter dollars, waved its antennae like the feelers of a lobster. Even as Dr. Geiger stooped to examine it more closely, it agitated its shiny, vein-patterned wings. They hummed like an electric fan, but it did not rise in flight. Its six legs were wired to staples in the box bottom.

"Lutho," said Geiger to the Negro, "go get some molasses. About two ounces."

"Yeah, boss." The big dark man rose to his full height. "Say, ain't we-all goin' to take out his stingah?"

"Not yet," replied the doctor, shaking his bearded head. "This is a specimen that must remain complete for study. When we've finished our process there'll be time enough to disarm it and teach it to be useful—a living aircraft." He paused to dream of what that last phrase meant.

"Yeah, boss," said Luther again, and slouched out to get the molasses. When he brought it back, Geiger and Shimada fed the oversized bee carefully. Then the doctor turned on the green ray once more.

"You're right, Shimada," he said. "The thing grows as you watch it. What'll the papers say?"

"Many lies," responded the Japanese sagely.

"Then we'll finish the job—maybe the domestication—before calling in reporters. Good thing we're alone on this farm."

Shimada squinted at the insect that seemed to swell and spread with each moment of the green glare. "You are sure it will be docile?"

Geiger nodded. "Of course. The bee is a social insect, fits into a complex and disciplined scheme of usefulness already. I'm confident that it can be trained and directed."

THE RAY burned for another hour. Twice during this hour Geiger went to a bench stacked with bottles and there mixed carbon, hydrogen, oxygen and other materials. Carefully weighing and checking them, he poured them into the great tank just above the glowing lens. In proportion as the bee grew to kitten-size, cat-size, dog-size, the mixture in the tank dwindled. When the doctor again switched off the power, the prisoner had increased to fill its soap box.

"We'll have to get it out of there," pronounced Geiger. "It'll break its wings, cooped up like that. Luther, get out the masks and the gas spray."

Luther went to a locker for the equipment, and all three arrayed themselves in goggles and respirators. Geiger himself handled the big atomizer that threw gas. As the three gathered around the box, the overgrown insect seemed to shrink and then draw itself tense.

"Does it know it is to be gassed?" suggested Shimada.

"Why not?" said Geiger. "Its brain grows with the rest of it. Think how intelligent a normal bee is, with only a tiny crumb of intellect." He squirted a cloud of gas upon the creature. It struggled violently and briefly, then subsided.

Quickly they loosed the wire that bound its feet and threw the box aside. Shimada and Luther began to bolt lengths of stout chain to the floor.

"Boss," mumbled Luther into his respirator, "that stingah's pow'ful big now. Ain't you goin' to take it out?"

Geiger shook his head. "I want to see it at its biggest."

Each of the chains terminated in a spring bracelet. These Shimada deftly snapped upon the six legs of the bee, legs as thick as curtain rods. As he fastened the last of them, the insect woke drowsily, stirred its wings, and scrambled erect. It was a yard long now and more than a foot high, with a plushy-seeming body banded in mustard and chocolate. The stinger that occasioned Luther so much apprehension jabbed in and out, a polished dark spine nearly five inches long.

"That'll be all for to-day," announced Geiger. "Let's eat supper."

IN THE MORNING they continued the work. As the ray gleamed against the creature's body Geiger smiled, Shimada pondered, and Luther brooded as though he expected the worst. They were kept busy mixing fresh chemical loads for the tank, for the growth was fast and great. In a little more than half an hour Geiger snapped the light off.

Before them, as tall as a horse and longer, stood the shackled monster that yesterday had been a gently buzzing morsel of life, capable of gathering a tablespoonful of honey in a season. Its

great football of a head bore convex, myriad-faceted eyes, like two clusters of jewels. The chained legs, braced in all directions like struts, were powerful as girders and big as scythe handles. On the shanks grew coarse fringes of hair, and the barrel-size abdomen, with its alternate bands, was furred like a collie dog. Above it beat the translucent wings, big enough for windmill sails.

"Beauty, beauty!" cried Dr. Geiger, tugging his heat-dampened beard. "You'll domesticate wonderfully—serve the human hive as messenger, freighter, passenger mount!"

"It is powerful," said Shimada. "It would break those chains, but the tight bracelets cut its ankles."

"How about the stingah?" ventured Luther once more.

As if on cue, the gigantic bee's weapon crept from its sheath—slender, keen, a natural saber.

"Ah, yes, the sting," said Geiger. "We'll feed our pet first, then the gas and a quick operation——"

He broke off, for the many-faceted eyes had turned upon him. Their sudden gaze staggered him like a blow, and he looked quickly away—just in time, something seemed to tell him.

"He undahstan's," murmured Luther.

"Maybe," granted Geiger. "Keep an eye on him, Shimada. Luther and I will bring molasses from the kitchen."

The Japanese nodded agreement, and the two others went into the back of the house. Dr. Geiger, at least, felt the tug of the bee's stare at his back, and Luther's dusky face was uneasy all the way along the hall. Soberly he turned the spigot of the molasses keg, and Geiger, holding a gallon measure to catch the ration, mused on what Luther had said. The thing understood that it would be gassed and disarmed. Certain it was that the tiny insect brain had become great, in power as in size.

Well, then, all the better for domesti-



cation. He speculated on the possibility of a whole squadron of bees, rideable like horses, loadable like mules—with wings and wisdom to boot, able to carry and to think, and costing no more than a gallon or so of cheap sweets every day. He, Geiger, would not only be a figure among scientists—he'd be a figure among financiers as well.

The molasses had filled the tin to the brim. Geiger lifted it carefully. All the way back down the hall his eyes were upon it, wary of splashing. It was Luther, walking behind him, who looked ahead and saw what had happened between Shimada and the bee.

The Negro's strong hand suddenly clamped Geiger's shoulder. The doctor jumped, spilled about an inch of molasses, started to protest. Then he, too, saw.

FACE TO FACE stood the shackled monster and Shimada. The little yellow man's face was drawn, blank. His muscles hung slack all over him, as though he were ready to collapse, yet was held erect by a power not his own. His slanting black eyes were wide, staring, and upon them focused the great, many-powered orbs of the gigantic bee. Every facet mirrored mastery, it seemed—poured that mastery upon the Japanese.

Hypnotism, thought Geiger at once.

He, too, stood still, as though unable to move or speak or tear his eyes away. Even the powerful grip of Luther upon his shoulder seemed distant and light. Yet a dispassionate corner of his intellect, as though it were an extra mind that observed without being shocked, formed the explanation. Hypnotism. That extra mind functioned throughout all that followed.

Shimada's fingers were fumbling mechanically in a pocket. They produced a bunch of keys. His limp legs buckled. He crouched on the floor, fiddled with

the locks that imprisoned the bee's limbs. One lock fell open—another—

The giant bee was unshackled.

Very handily and delicately, its forefeet closed around Shimada and drew him upright. A great tongue, like a razor strop, licked Shimada's hair caressingly. The Japanese sagged down, and the supporting forefeet eased him to the floor. He slept.

Geiger found his voice, screamed wordlessly in protest and execration. Luther tried to snatch him out of sight, but too late. The head turned, the multiple eyes saw.

The watchers ran. Surely the thing was too big, too wide in the wings, to negotiate the door— But there came a crash of masonry, a falling of boards. Geiger's extra mind explained to him as he ran; a bee was strong out of all proportion to its size, and this one was larger than a horse. Then they were out of the narrow hall. That momentarily baffled the thing. Luther, ahead, crossed the kitchen in a leap and jerked open the back door. They dashed out into the yard.

It was bright and oppressively hot there. The doctor paused and gazed stupidly at the molasses tin. He still held it, almost empty, and his front was bedewed with thick sweetness. He had borne that gallon measure, splashing at every step, in his desperate flight. Licking his dry lips, he set it down.

Luther had taken the ax from the woodpile beside the door. He turned toward the house. "I bettah go back," he announced.

"Back?" echoed Geiger, as if he had never heard the word before.

"Can't leave Shimada in there," said Luther in the apologetic tone he employed when mentioning a chore he had forgotten. Slowly but firmly he set his foot on the threshold.

Then the roar of wings burst upon them. Geiger, still in the yard, saw the

clapboards spring from their fastenings to right and left of the door. The jambs fell away in splinters, and the monster bee was swooping into the open, its wings full of rainbows.

Luther swung the ax, missed. Next moment he had been snatched up into the air, like a rabbit by an eagle. All six feet clutched him. The banded abdomen curved under, baring its weapon. Luther cried out, wildly and briefly. Then, released, he fell. His slayer beat high up into the heavens.

Geiger ran to Luther and bent down. The Negro was dead, already swelling with his sudden freight of poison. His hand still clutched the ax, and Geiger wrenched it from him, then stared up. The terror was high and far. It seemed no larger than an ordinary bee.

THE DOCTOR hurried back into the house, through the ruined kitchen and hall, into the laboratory.

Shimada lay where the bee had placed him. Geiger flung down the ax, knelt and shook the still figure. The slant eyes opened drowsily; the head nodded as if in recollection of something.

"We must hurry," said Shimada mechanically. "It will be back. We must be ready."

"What will be back?" demanded Geiger.

"The bee, with companions—to be made great like itself. Yes. That will be our job."

Geiger felt the blood throbbing in his ears and temples. He caught a great tuft of beard in his teeth. "What are you saying?" he shouted, as though Shimada could be made understandable again by force of lungs. "You want to work on other bees? Make them huge, to destroy the world?"

Again the mechanical nod. "We must," said the drowsy voice. "We must."

He turned and began to check the mechanism of the ray apparatus.

"Wake up!" Geiger thundered at him. "You've been hypnotized!"

Shimada turned, smiling thinly. "No, not hypnotized," he amended. "I only know what is right, what should rule. The bees, made great and wise——"

"Do you want to betray the human race?" Geiger interrupted him. "Well, I won't let you."

At that the Japanese suddenly whipped around and closed in. Geiger tried to hit him, felt a twisting pain in his right arm—*jujutsu*. The agony roared through his body like fire. He collapsed, Shimada pinning him expertly to the floor.

"You will serve," panted the Japanese in his ear, "as I serve."

The air outside filled with a humming roar. Then silence. Then a heavy, flat *clop, clop, clop* in the kitchen. Then in the hall, *clop, clop, clop*—great, horny feet walking——

It was entering the laboratory, a striding derrick with folded wings. Its two forelegs were doubled up to cradle a white-painted wooden box—a hive, humming dully with hundreds of tiny bees.

Shimada released Geiger and stood up, cringingly alert. Geiger, suddenly wiser than he had ever been, rolled upon his face and crouched there.

"You have returned," said Shimada to the winged mastodon. "Your companions, too, shall be increased. You shall rule."

Geiger dared look no higher than those great, spiny feet. He must not meet the compelling eye clusters that knew how to bind and bend a man's will.

"This person shall serve you, too," Shimada was babbling. "See, he falls down to worship before you, as all humanity shall worship. Human hands

are too weak to hold this world against the wings and stings of bees, made great and strong."

GEIGER, groveling, tried to plan. What if the mighty insect could read his rebellious thoughts through the back of his bowed head?

Shimada addressed him softly, "Go to the bench, Geiger. Mix the chemicals."

"Yes," he muttered. "I'll mix them."

He did not rise, but crept on all fours to the bench. There he came to his knees, took the largest beaker, poured various liquids into it. *Clop, clop*—the monster was moving behind him.

"A new day dawns," went on Shimada, chanting in exultant hysteria. "The day of the bee."

*Clop, clop*—the thing had come to gaze over his shoulder. Was it only curious, or did it recognize the falsity of his submission? Would it strike the sting into him, kill him as it had killed Luther?

He caught his bearded lower lip in his teeth, repeated in his heart the first half dozen words of a childhood prayer. Then he spun on his knees.

He dashed the beaker's contents—a frothing blend of all the corrosive acids he had been able to put his hands on—full into the staring mask that hung above and before him.

At once all was roaring chaos. Blinded, its face half eaten away on the instant, the monster clutched for Geiger. By a miracle he dodged away, snatching up Luther's ax from the floor. Its wings made a howling gale as it charged him, missed, upset the ray apparatus and cannoned into the wall. Plaster fell away in sheets. The thing fluttered and scrambled, half stunned. Then Geiger ran in, whirling his ax. The blade hit into the cablelike neck.

The acid-scalded head flew across the room like an empty basket in a hurricane. The carcass collapsed and floundered, its sting jabbing in and out, piston-wise.

Silence for six seconds.

The little bees of the overturned hive began to hum softly in the room. One of them, soaring up, jabbed Shimada's ear.

"Ow!" he yelped. Then, in his normal voice, "Dr. Geiger! What has happened? Was I hurt?"

He ran through the wreckage of the ray apparatus, a hand stretched toward his employer. His eyes were clear, sane; his face asked many questions. With the bee had died its spell.

Geiger felt weary and shaky and, despite the temperature and his exertions, a little chilly. First he wondered what to tell Shimada. Then he wondered what to tell the world.

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## LISTERINE SHAVING CREAM

# Into The Future

*This issue is the first one of the fifth year of the New Astounding Stories. It is, in one way, a momentous anniversary issue; but in a bigger and more practical sense it is my time for taking stock, checking up and asking myself, "Quo Vadis?" "Whither goest thou?"*

*In the ability to answer that question honestly lies the secret of progress throughout the ages of time, and the timeless ages before time was registered by shadows on crude sundials.*

*I could not write in this vein to most magazine audiences, but you and I belong to a select circle. We can sit side by side though we may be a thousand miles apart—for we are watching the same stars, the same moon, the same planets. You and I have learned to know them, not as flickering points of light in a distant sky, but as familiar distances which we have traversed together.*

*To the average person "The Black Hole of Cygnus" means nothing. But you and I have threaded our way along various threads of logic concerning it. We think about it, and wonder. That is why we are a select circle. Is it, possibly, an area of negative energy? (How strange that question would sound to an outsider!) We don't know, but we speculate.*

*We have absorbed variant theoretical explanations of phenomena concerning which the average person has never heard. We debate them calmly, restrainedly, for that is the manner of serious students. And that is why I feel I can answer the question in the first paragraph honestly in this way: "Forward—toward the stars."*

*I couldn't say anything finer about an audience, for we are a great army without discord. Debate? Of course! Differing opinions? Certainly. But with an inspiration visualized by dreams of the future, based on known facts of the present.*

*A fine circle, an exclusive circle, but one which can always welcome another friend to the camp fire. Once again I wonder if you won't pass your copy along to some one who may be enough of a thinker to join us in our journey through the fifth year of science-fiction progress in the New Astounding Stories. Will you? Thank you.*

*The Editor.*



**Part II**  
**of a great**  
**science novel —**

# Galactic Patrol

by E. E. Smith, Ph.D.

## UP TO NOW:

*Law enforcement lagged behind crime because the police were limited in their spheres of action, while criminals were not. Therefore, when the inertialess drive was perfected and commerce throughout the galaxy became commonplace, crime became so rampant as to threaten civilization. Thus came into being the Galactic Patrol, an organiza-*

*tion whose highest members, the Lensmen, are of unlimited authority and range. Each is identified by wearing the Lens, a pseudoliving telepathic jewel matched to the ego of its wearer by those master philosophers, the Arisians. The Lens cannot be either imitated or counterfeited, since it glows with color when worn by its owner, and since it kills any other who attempts to wear it.*

*Of each million selected candidates for,*





*The two repulsively erect bipeds before them neither burned nor fell.  
Beams—no matter how powerful—did not reach them at all—*

the Lens, all except about a hundred fell before the grueling tests employed to weed out the unfit. Kimball Kinnison graduates No. 1 in his class, and is given command of the space ship *Brittania*, which is of a new type, using explosives. He is informed that the pirates, or Boskonians, are gaining the upper hand over the patrol because of a new and almost unlimited source of power. He is instructed to capture one of the new-type pirate ships, in order to learn the secret of that power.

Kinnison is successful in finding and defeating a pirate warship. Peter VanBuskirk leads the storming party of Valerians—men of remote human ancestry, but of extraordinary size, strength, and agility because of the terrific gravitation of their native planet—in wiping out those of the pirate crew not killed in the battle between the two ships.

Then the scientists get the information they want. It cannot be transmitted to Prime Base, however, because the pirates are blanketing all channels of communication. Boskonian ships are gathering, and the crippled *Brittania* can neither run nor fight. Therefore, each man is given a spool of tape bearing the information and they take to the lifeboats, after setting up a "direction-by-chance" to make the *Brittania* pursue an unpredictable course in space, and after rigging bombs to explode her at the first touch of a pirate beam.

The *Brittania's* erratic course brings her back near the lifeboat of Kinnison and VanBuskirk, where the pirates attempt to stop her. She blows up, and the explosion disables practically the entire personnel of one of the attackers. The two patrolmen capture the pirate ship and drive her toward home, as far as the solar system of *Velantia*, before being blocked off by the Boskonians.

Abandoning the vessel, they land beside a cliff upon the planet *Delgon*, where they are attacked by a horde of Catlats. Through his Lens Kinnison

sends out a mental call for help; and, shortly after his call is answered, a winged reptile comes hurtling downward from the top of the cliff.

AS the quasi-reptilian organism descended, the cliff dwellers went mad. Their attack upon the two patrolmen, already vicious, became insanely frantic. Abandoning the gigantic Dutchman entirely, every Catlat within reach threw himself upon Kinnison and so enwrapped the Lensman's head, arms, and torso that he could scarcely move a muscle. Then entwining captors and helpless man moved slowly toward the largest of the openings in the cliff's obsidian face.

Upon that slowly moving mélange VanBuskirk hurled himself, deadly space ax swinging. But, hew and smite as he would, he could neither free his chief from the grisly horde enveloping him nor impede, measurably, that horde's progress toward its goal. However, he could and did cleave away the comparatively few cables confining Kinnison's legs.

"Clamp a leg lock around my waist, Kim," he directed, the flashing thought in no whit interfering with his prodigious ax play, "and as soon as I get a chance, before the real tussle comes, I'll couple us together with all the belt snaps I can reach. Wherever we're going we're going together! Wonder why they haven't ganged up on me, too, and what that lizard is doing? Been too busy to look, but thought he'd have been on my back before this."

"He won't be on your back. That's Worsel, the lad who answered my call. I told you his voice was funny? They can't talk or hear—use telepathy, like the Manarkans. He's cleaning them out in great shape. If you can hold me for three minutes, he'll have the lot of them whipped."

"I can hold you for three minutes

against all the vermin between here and Andromeda," VanBuskirk declared. "There, I've got four snaps on you."

"Not too tough, Bus," Kinnison cautioned. "Leave enough slack so that you can cut me loose if you have to. Remember that the spools are more important than any one of us. Once inside that cliff we'll all be washed up—even Worsel can't help us there—so drop me rather than go in yourself."

"Um," grunted the Dutchman, non-committally. "There, I've tossed my spool out onto the ground. Tell Worsel that if they get us he is to pick it up and carry on. We'll go ahead with yours, inside the cliff if necessary."

"I said cut me loose if you can't hold me!" Kinnison snapped, "and I meant it. That's an official order. Remember it!"

"Official order be damned!" snorted VanBuskirk, still plying his ponderous mace. "They won't get you into that hole without breaking me in two, and that will be a job of breaking in anybody's language. Now shut your pan," he concluded grimly. "We're here, and I'm going to be too busy, even to think, very shortly."

He spoke truly. He had already selected his point of resistance, and as he reached it he thrust the head of his mace into the crack behind the open trapdoor, jammed its shaft into the shoulder socket of his armor, set blocky legs and Herculean arms against the side of the cliff, arched his mighty back, and held. And the surprised Catlats, now inside the gloomy fastness of their tunnel, thrust anchoring tentacles in the wall and pulled harder, ever harder.

Under the terrific stress Kinnison's heavy armor creaked as its air-tight joints accommodated themselves to their new and unusual positions. That armor, of space-tempered alloy, would, of course, not give way—but what of its human anchor?

WELL IT WAS for Kimball Kinnison that day, and well for our present civilization, that the *Brittania's* quartermaster selected Peter VanBuskirk for the Lensman's mate; for death, inevitable and horrible, resided within that cliff, and no human frame of Earthly upbringing, however armored, could have borne, for even a fraction of a second, the violence of the Catlats' pull.

But Peter VanBuskirk, although of Earthly Dutch ancestry, had been born and reared upon the planet Valeria, and that massive planet's gravity—over two and one half times Earth's—had given him a physique and a strength almost inconceivable to us life-long dwellers upon small, green Terra. His head, as has been said, towered seventy-eight inches above the ground; but at that he appeared squatly because of his enormous spread of shoulder and his startling girth. His bones were elephantine—they had to be, to furnish adequate support and leverage for the incredible masses of muscle overlaying and surrounding them. But even VanBuskirk's Valerian strength was now being taxed to the uttermost.

The anchoring chains hummed and snarled as the clamps bit into the rings. Muscles writhed and knotted; tendons stretched and threatened to snap; sweat rolled down his mighty back. His jaws locked in agony and his eyes started from their sockets with the effort; but still VanBuskirk held.

"Cut me loose!" commanded Kinnison at last. "Even you can't take much more of that. No use letting them break your back. Cut, I tell you. I said cut, you big, dumb, Valerian ape!"

But if VanBuskirk heard or felt the savagely voiced commands of his chief, he gave no heed. Straining to the very ultimate fiber of his being, exerting every iota of loyal mind and every atom of Broddingnagian frame, grimly, tenaciously, stubbornly the gigantic Dutchman held.

Held while Worsel of Velantia, that grotesquely hideous, that fantastically reptilian ally, plowed toward the two patrolmen through the horde of Catlats; a veritable tornado of rending fang and shearing talon, of beating wing and crushing snout, of mailed hand and trenchant tail.

Held while that demon incarnate drove closer and closer, hurling entire Catlats and numberless dismembered fragments of Catlats to the four winds as he came.

Held while the raging tumult, whose center was Worsel, swept over his rigid body like an ocean wave breaking over an immovable rock:

Held until Worsel's snakelike body, a supple and sentient cable of living steel, tipped with its double-edged, razor-keen, scimitarlike sting, slipped into the tunnel beside Kinnison and wrought grisly havoc among the Catlats close-packed there!

As the terrific tension upon him was suddenly released VanBuskirk's own efforts hurled him away from the cliff. He fell to the ground, his overstrained muscles twitching uncontrollably, and on top of him fell the fettered Lensman. Kinnison, his hands now free, unfastened the clamps linking his armor to that of VanBuskirk and whirled to confront the foe. But the fighting was over. The Catlats had had enough of Worsel of Velantia; and, shrieking in baffled rage, the last of them were disappearing into their caves. He turned back to VanBuskirk, who was getting shakily to his feet.

"Thanks a lot, Worsel; we were just about to run out of time——" VanBuskirk began, only to be silenced by an insistent thought from the grotesque stranger.

"Stop that radiating! Do not think at all if you cannot screen your minds!" came the urgent mental commands. "These Catlats are a very minor pest of this planet Delgon. There are others

worse by far. Fortunately, your thoughts are upon a frequency never used here—if I had not been so very close to you I would not have heard you at all—but should the Overlords have a listener upon that band, your unshielded thinking may already have done irreparable harm. Follow me. I will slow my speed to yours, but hurry all possible!"

"You tell 'im, chief," VanBuskirk said, and fell silent; his mind as nearly a perfect blank as his iron will could make it.

"This is a screened thought, through my Lens," Kinnison took up the conversation. "You don't need to slow down on our account. We can develop any speed you wish. Lead on!"

THE VELANTIAN leaped into the air and flashed away in headlong flight. Much to his surprise, the two human beings kept up with him effortlessly upon their inertialess drives, and after a moment Kinnison directed another thought.

"If time is an object, Worsel, know that my companion and I can carry you anywhere you wish to go at a speed hundreds of times greater than this that we are using," he vouchsafed.

It developed that time was of the utmost possible importance and the three closed in. Mighty wings folded back, hands and talons gripped armor chains, and the group, inertialess all, shot away at a pace that Worsel of Velantia had never even imagined in his wildest dreams of speed. Their goal, a small, featureless tent of thin sheet metal, occupying a barren spot in a writhing, crawling expanse of lushly green jungle, was reached in a space of minutes. Once inside, Worsel sealed the opening and turned to his armored guests.

"We can now think freely in open converse. This wall is the carrier of a

screen through which no thought can make its way."

"This world you call by a name I have interpreted as Delgon," Kinnison began, slowly. "You are a native of Velantia, a planet now beyond the Sun. Therefore, I assumed that you were taking us to your space ship. Where is that ship?"

"I have no ship," the Velantian replied, composedly, "nor have I need of one. For the remainder of my life—which is now to be measured in a few of your hours—this tent is my only—"

"No ship!" VanBuskirk broke in. "I hope we won't have to stay on this God-forsaken planet forever—and I'm not very keen on going much farther in that lifeboat, either."

"We may not have to do either of those things," Kinnison reassured his sergeant. "Worsel comes of a long-lived tribe, and the fact that he thinks his enemies are going to get him in a few hours doesn't make it true, by any means. There are three of us to reckon with now. Also, when we need a space ship we'll get one, if we have to build it. Now, let's find out what this is all about. Worsel, start at the beginning and don't skip a thing. Between us we can surely find a way out, for all of us."

THEN the Velantian told his story. There was much repetition, much round-about thinking, as some of the concepts were so bizarre as to defy transmission, but finally the Earthman had a fairly complete picture of the situation within that strange solar system.

The inhabitants of Delgon were bad, being characterized by a type and a depth of depravity impossible for a mind of Earth to visualize. Not only were the Delgonians enemies of the Velantians in the ordinary sense of the word; not only were they pirates and robbers; not only were they their masters, taking them both as slaves and as food cattle; but there was something more, some-

thing deeper and worse, something only partially transmissible from mind to mind—a horribly and repulsively Saturnalian type of mental and intellectual, as well as biological, parasitism. This relationship had gone on for ages.

Finally, however, a thought screen had been devised, behind which Velantia developed a high science of her own. The students of this science lived with but one purpose in life: to free Velantia from the tyranny of the Overlords of Delgon. Each student, as he reached the zenith of his mental power, went to Delgon, to study and if possible destroy the tyrants. And after disembarking upon the soil of that dread planet no Velantian, whether student or scientist or private adventurer, had ever returned to Velantia.

"But why don't you lay a complaint against them before the council?" demanded VanBuskirk. "They'd straighten things out in a hurry."

"We have not heretofore known, save by the most unreliable and roundabout reports, that such an organization as your Galactic Patrol really exists," the Velantian replied, obliquely. "Nevertheless, many years since, we launched a space ship toward its nearest reputed base. However, since that trip requires three normal lifetimes, with deadly peril in every moment, it will be a miracle if the ship ever completes it.

"Furthermore, even if the ship should reach its destination, our complaint will probably not even be considered, because we have not a single shred of real evidence with which to support it. No living Velantian has ever seen a Delgonian, nor can any one testify to the truth of anything I have told you. While we believe that that is the true condition of affairs, our belief is based, not upon evidence admissible in a court of law, but upon deductions from occasional thoughts radiated from this planet. Nor were these thoughts alike in tenor—"



"Skip that for a minute—we'll take the picture as correct," Kinnison broke in. "Nothing you have said so far shows any necessity for you to die in the next few hours."

"The only object in life for a trained Velantian is to liberate his planet from the horrors of subjection to Delgon. Many such have come here, but not one has found a workable idea; not one has either returned to or even communicated with Velantia after starting work here. I am a Velantian. I am here. Soon I shall open that door and get in touch with the enemy. Since better men than I am have failed, I do not expect to succeed. Nor shall I return to my native planet. As soon as I start to work the Delgonians will command me to come to them. In spite of myself I will obey that command, and very shortly thereafter I shall die, in what fashion I do not know."

"SNAP OUT OF IT, Worsel!" barked Kinnison, roughly. "That's the rankest kind of defeatism, and you know it. Nobody ever got to the first check station on that kind of fuel."

"You are talking about something now about which you know nothing whatever." For the first time Worsel's thoughts showed passion. "Your thoughts are idle—ignorant—vain. You know nothing whatever of the mental power of the Delgonians."

"Maybe not—I make no claim of being a mental giant—but I do know that mental power alone cannot overcome a definitely and positively opposed will. An Arisian could probably break my will, but I'll stake my life that no other mentality in the known universe can do it!"

"You think so, Earthling?" And a seething sphere of mental force encompassed the Tellurian's brain. Kinnison's senses reeled at the terrific impact; but he shook off the attack and smiled.

"Come again, Worsel. That one jarred me to the heels, but it didn't quite ring the bell."

"You flatter me," the Valentian declared in surprise. "I could scarcely touch your mind—could not penetrate even its outermost defenses, and I exerted all my force. But that fact gives me hope. My mind is, of course, inferior to theirs, but since I could not influence you at all, even in direct contact and at full power, you may be able to resist the minds of the Delgonians. Are you willing to hazard the stake you mentioned a moment ago? Or rather, I ask you, by the Lens you wear, so to hazard it—with the liberty of an entire people dependent upon the outcome."

"Why not? The spools come first, of course—but without you our spools would both be buried now inside the cliff of the Catlats. Fix it so that your people will find these spools and carry on with them in case we fail, and I'm your man. There—now tell me what we're apt to be up against, and then let loose your dogs."

"That I cannot do. I know only that they will direct against you mental forces such as you never even imagined. I cannot forewarn you in any respect whatever as to what forms those forces may appear to assume. I know, however, that I shall succumb to the first bolt of force. Therefore, bind me with these chains before I open the shield. Physically, I am extremely strong, as you know; therefore, be sure to put on enough chains so that I cannot possibly break free, for if I can break away I shall undoubtedly kill both of you."

"How come all these things here, ready to hand?" asked VanBuskirk, as the two patrolmen so loaded the passive Velantian with chains, manacles, handcuffs, leg irons and straps that he could not move even his tail.

"It has been tried before, many times," Worsel replied bleakly, "but the rescuers, being Velantians, also suc-

cumbed to the force and took off the irons. Now I caution you, with all the power of my mind—no matter what you see, no matter what I may command you or beg of you, no matter how urgently you yourself may wish to do so—*do not liberate me under any circumstances* unless and until things appear exactly as they do now and that door is shut. Know fully and ponder well the fact that if you release me while that door is open it will be because you have yielded to Delgonian force, and that not only will all three of us die, lingeringly and horribly, but also, and worse, that our deaths will not have been of any benefit to civilization. Do you understand? Are you ready?"

"I understand. I am ready," thought Kinnison and VanBuskirk as one.

"Open that door."

KINNISON did so. For a few minutes nothing happened. Then three-dimensional pictures began to form before their eyes—pictures which they knew existed only in their own minds, yet which were composed of such solid substance that they obscured from vision everything else in the material world. At first hazy and indistinct, the scene—for it was in no sense now a picture—became clear and sharp. And, piling horror upon horror, sound was added to sight. And directly before their eyes, blotting out completely even the solid metal of the wall only a few feet distant from them, the two outlanders saw and heard something which can be represented only vaguely by imagining Dante's *Inferno* an actuality and raised to the *n*th power!

In a dull and gloomy cavern there lay, sat, and stood hordes of *things*. These beings—the "nobility" of Delgon—had reptilian bodies, somewhat similar to Worsel's, but they had no wings and their heads were distinctly apish rather than crocodilian. Every greedy eye in the vast throng was fixed upon an

enormous screen which, like that in a motion-picture theater, walled off one end of the stupendous cavern.

Slowly, shudderingly, Kinnison's mind began to take in what was happening upon that screen. And it was really happening, Kinnison was sure of that. This was not a picture any more than this whole scene was an illusion. It was all an actuality—somewhere.

Upon that screen there were stretched out victims. Hundreds of these were Velantians, more hundreds were winged Delgonians, and scores were creatures whose like Kinnison had never seen. And all these were being tortured; tortured to death both in fashions known to the Inquisitors of old and ways of which even those experts had never an inkling.

Some were being twisted outrageously in three-dimensional frames. Others were being stretched upon racks. Many were being pulled horribly apart, chains intermittently but relentlessly extending each helpless member. Still others were being lowered into pits of constantly increasing temperatures or were being attacked by gradually increasing concentrations of some foully corrosive vapor which ate away their tissues, little by little. And, apparently the *pièce de résistance* of the hellish exhibition, one luckless Velantian, in a spot of hard, cold light, was being pressed out flat against the screen, as an insect might be pressed between two panes of glass. Thinner and thinner he became, under the influence of some awful, invisible force, in spite of every exertion of inhumanely powerful muscles driving body, tail, wings, arms, legs, and head in every frantic maneuver which grim and imminent death could call forth.

Physically nauseated, brainsick at the atrocious visions blasting his mind and at the screaming of the damned assailing his ears, Kinnison strove to wrench his mind away, but was curbed savagely by Worsel.

"You *must* stay! You *must* pay attention!" commanded the Velantian. "This is the first time any living being has seen so much! You *must* help me now! They have been attacking me from the first; but, braced by the powerful negatives in your mind, I have been able to resist and have transmitted a truthful picture so far. But they are surprised at my resistance and are concentrating more force. I am slipping fast. You *must* brace my mind! And when the picture changes—as change it must, and soon—do not believe it. Hold fast, brothers of the Lens, for your own lives and for the people of Velantia. There is more—and worse!"

Kinnison stayed. So did VanBuskirk, fighting with all his stubborn Dutch mind. Revolted, outraged, nauseated as they were at the sights and sounds, they stayed. Flinching with the victims as they were fed into the hoppers of slowly turning mills; wincing at the unbelievable acts of the boilers, the beaters, the scourgers, the flayers; suffering themselves every possible and many apparently impossible nightmares.

The light in the cavern now changed to a strong, greenish-yellow glare; and in that hard illumination it was to be seen that each dying being was surrounded by a palely glowing aura. And now, crowning horror of that unutterably horrible orgy of sadism resublimed, from the eyes of each one of the monstrous audience there leaped out visible beams of force. These beams touched the auræ of the dying prisoners—touched and clung. And as they clung the auræ shrank and disappeared.

The Overlords of Delgon were actually *feeding* upon the ebbing life forces of their tortured, dying victims!

## VI.

GRADUALLY and so insidiously that the Velantian's dire warnings might as well never have been uttered, the

scene changed. Or rather, the scene itself did not change, but the observers' perception of it slowly underwent such a radical transformation that it was in no sense the same scene it had been a few minutes before; and they felt almost abjectly apologetic as they realized how unjust their previous ideas had been.

For the cavern was not a torture chamber, as they had supposed. It was, in reality, a hospital, and the beings they had thought victims of brutalities unspeakable were, in reality, patients undergoing treatments and operations for various ills. In proof whereof the patients—who should have been dead by this time were the early ideas well-founded—were now being released from the screenlike operating theater. And not only was each one completely whole and sound in body, but he was also possessed of a mental clarity, power, and grasp undreamed of before his hospitalization and treatment by Delgon's super surgeons!

Also, the intruders had misunderstood completely the audience and its behavior. They were really medical students, and the beams which had seemed to be devouring rays were simply visibeams, by means of which each student could follow, in close-up detail, each step of the operation in which he was most interested. The patients themselves were living, vocal witnesses of the visitors' mistakenness, for each, as he made his way through the assemblage of students, was voicing his thanks for the marvelous results of his particular treatment or operation.

Kinnison now became acutely aware that he himself was in need of immediate surgical attention. His body, which he had always regarded so highly, he now perceived to be sadly inefficient; his mind was in even worse shape than his physique; and both body and mind would be improved immeasurably if he could get to the Delgonian hospital before the surgeons departed. In fact, he

felt an almost irresistible urge to rush away toward that hospital instantly, without the loss of a single precious second. And, since he had had no reason to doubt the evidence of his own senses, his conscious mind was not aroused to active opposition. However, in his subconscious, or his essence, or whatever you choose to call that ultimate something of his that made him a Lensman, a "dead, slow bell" began to sound.

"Release me and we'll all go, before the surgeons leave the hospital," came an insistent thought from Worsel. "But hurry—we haven't much time!"

VanBuskirk, completely under the influence of the frantic compulsion, leaped toward the Velantian, only to be checked bodily by Kinnison, who was foggily trying to isolate and identify one thing about the situation that did not ring quite true.

"Just a minute, Bus. Shut that door first!" he commanded.

"Never mind the door!" Worsel's thought came in a roaring crescendo. "Release me instantly! Hurry, or it will be too late, for all of us!"

"All this terrific rush doesn't make any kind of sense at all," Kinnison declared, closing his mind resolutely to the clamor of the Velantian's thoughts. "I want to go just as badly as you do, Bus, or maybe more so—but I can't help feeling that there's something screwy somewhere. Anyway, remember the last thing Worsel said, and let's shut the door before we unsnap a single chain."

Then something clicked in the Lensman's mind.

"Hypnotism, through Worsel!" he barked, opposition now aflame. "So gradual that it never occurred to me to build up a resistance. Holy rackets, what a fool I've been! Fight 'em, Bus—*fight 'em!* Don't let 'em kid you any more, and pay no attention to anything Worsel sends at you!" Whirling around,

he leaped toward the open door of the tent.

But as he leaped his brain was invaded by such a concentration of force that he fell flat upon the floor, physically out of control. He must *not* shut the door. He *must* release the Velantian. They *must* go to the Delgonian cavern. Fully aware now, however, of the source of the waves of compulsion, he threw the sum total of his mental power into an intense negation and struggled, inch-wise, toward the opening.

UPON HIM NOW, in addition to the Delgonians' compulsion, beat at point-blank range the full power of Worsel's mighty mind, demanding release and compliance. Also, and worse, he perceived that some powerful mentality was being exerted to make VanBuskirk kill him. One blow of the Valerian's ponderous mace would shatter helmet and skull, and all would be over. Once more the Delgonians would have triumphed. But the stubborn Dutchman, although at the very verge of surrender, was still fighting. He would take one step forward, bludgeon poised aloft, only to throw it convulsively backward.

Again and again VanBuskirk repeated his futile performance, while the Lensman struggled nearer and nearer the door. Finally, he reached it and kicked it shut. Instantly, the mental turmoil ceased and the two, white and shaking patrolmen released the limp, unconscious Velantian from his bonds.

"Wonder what we can do to help him revive," gasped Kinnison. But his solicitude was unnecessary; the Velantian recovered consciousness as he spoke.

"Thanks to your wonderful power of resistance, I am alive, unharmed, and know more of our foes and their methods than any other of my race has ever learned," Worsel thought, feelingly. "But it is of no value whatever unless

I can send it back to Velantia. The thought screen is carried only by the metal of these walls; and if I make an opening in the wall to think through, however small, it will now mean death. Of course, the science of your patrol has not perfected an apparatus to drive through such a screen."

"No. Anyway, it seems to me that we'd better be worrying about something besides thought screens," Kinnison suggested. "Surely, now that they know where we are, they'll be coming out here after us, and we haven't got much of any defense."

"They don't know where we are, or care—" began the Velantian.

"Why not?" broke in VanBuskirk. "Any spy ray capable of such scanning as you showed us—I never saw anything like it before—would certainly be as easy to trace as an out-and-out gas blast!"

"I sent out no spy ray or anything of the kind," Worsel thought, carefully. "Since our science is so foreign to yours, I am not sure that I can explain satisfactorily, but I shall try to do so. First, as to what you saw. When that door is open, no barrier to thought exists. I merely broadcast a thought, placing myself *en rapport* with the Delgonian Overlords in their retreat. This condition established, of course I heard and saw exactly what they heard and saw—and so, equally of course, did you, since you were also *en rapport* with me. That is all."

"That's *all*!" echoed VanBuskirk. "What a system! You can do a thing like that, without apparatus of any kind, and yet say 'that's all'!"

"It is results that count," Worsel reminded him gently. "While it is true that we have done much—this is the first time in history that any Velantian has encountered the mind of a Delgonian Overlord and lived. It is equally true that it was the will power of you patrolmen that made it possible, not

my mentality. Also, it remains true that we cannot leave this room and live."

"Why won't we need weapons?" asked Kinnison, returning to his previous line of thought.

"Thought screens are the only defense we will require," Worsel stated, positively, "for they use no weapons except their minds. By mental power alone they make us come to them; and, once there, their slaves do the rest. Of course, if my race is ever to rid the planet of them, we must employ offensive weapons of power. We have such, but we have never been able to use them. For, in order to locate the enemy, either by telepathy or by spy ray, we must open our metallic shields—and the instant we release those screens we are lost. From those conditions there is no escape," Worsel concluded, hopelessly.

"Don't be such a pessimist," Kinnison commanded. "There are a lot of things not tried yet. For instance, from what I have seen of your generator equipment and that screen, you don't need a metallic conductor any more than a snake needs hips. Maybe I'm wrong, but I think we're a bit ahead of you there. If a DeVilbiss projector can handle that screen—and I think it can, with special tuning—VanBuskirk and I can fix things in an hour so that all three of us can walk out of here in perfect safety—from mental interference, at least. While we're trying it out, tell us all the new stuff you got on them just now, and anything else that, by any possibility, may prove useful. And remember you said this is the first time any of you had been able to cut them off. That fact ought to make them sit up and take notice. Probably they'll stir around more than they ever did before. Come on, Bus—let's tear into it!"

THE DeVilbiss projectors were rigged and tuned. Kinnison had been



right; they worked. Then plan after plan was made, only to be discarded as its weaknesses were pointed out.

"Whichever way we look there are too many 'ifs' and 'buts' to suit me," Kinnison summed up the situation finally. "If we can find them, and if we can get up close to them without losing our minds to them, we could clean them out if we had some power in our accumulators. So I'd say the first thing for us to do is to get our batteries charged. We saw some cities from the air, and cities always have power. Lead

us to power, Worsel—almost any kind of power—and we'll soon have it in our guns."

"There are cities, yes"—Worsel was not at all enthusiastic—"dwelling places of the ordinary Delgonians, the people you saw being eaten in the cavern of the Overlords. As you saw, they resemble us Velantians to a certain extent. Since they are of a lower culture and are much weaker in life force than we are, however, the Overlords prefer us to their own slave races.

"To visit any city of Delgon is out



*"Stop that radiating! Do not think at all if you cannot screen your mind," came the mental command.*

of the question. Every inhabitant of every city is an abject slave and his brain is an open book. Whatever he sees, whatever he thinks, is communicated instantly to his master. And I now perceive that I may have misinformed you as to the Overlords' ability to use weapons. While the situation has never arisen, it is only logical to suppose that as soon as we are seen by any Delgonian the controllers will order all the inhabitants of the city to capture us and bring us to them."

"What a guy!" interjected VanBuskirk. "Did you ever see his top for looking at the bright side of life?"

"Only in conversation," the Lensman replied. "When the ether gets crowded, you notice, he's right in here, blasting away and not saying a word. But there's one thing we haven't thought of: power. I've got only eight minutes of free flight left in my battery; and with your mass, you must be about out. Come to think of it, didn't you land a trifle hard when we sat down here?"

"Practically inert."

"That means we've *got* to get some power. Well, it's not so bad, at that; there's a city right close."

"Yes, but as far as I'm concerned it might as well be on Mars. You know as well as I do what's between here and there. You can take my batteries and I'll wait here."

"On your emergency food, water, and air? That's out!"

"What else, then?"

"I can spread my field to cover all three of us," proposed Kinnison. "That will give us at least one minute of free flight—almost, if not quite, enough to clear the jungle. They have night here; and, like us, the Delgonians are night sleepers. We start at dusk, and to-night we recharge our batteries."

THE FOLLOWING HOUR, during which the huge, hot Sun dropped to the horizon, was spent in intense dis-

cussion, but no significant improvement upon the Lensman's plan could be devised.

"It is time to go," Worsel announced, curling out one extensile eye toward the vanishing orb. "I have recorded all my findings. Already I have lived longer and, through you, have accomplished more, than any one believed possible. I am ready to die. I should have been dead long since."

"Living on borrowed time's a lot better than not living at all," Kinnison replied, with a grin. "Link up. Ready? Go!"

He snapped his switches and the close-linked group of three shot into the air and away. As far as the eye could reach in any direction extended the sentient, ravenous growth of the jungle; but Kinnison's eyes were not upon that fantastically inimical green carpet. His whole attention was occupied by two all-important meters and by the task of so directing their flight as to gain the greatest possible horizontal distance with the power at his command.

Fifty seconds of flashing flight, then: "All right, Worsel, get out in front and get ready to pull!" Kinnison snapped. "Ten seconds of drive left, but I can hold us free for five seconds after my driver quits. Pull!"

Kinnison's driver expired, its small accumulator completely exhausted; and Worsel, with his mighty wings, took up the task of propulsion. Inertialess still, with Kinnison and VanBuskirk grasping his tail, each beat a mile-long leap, he struggled on. But all too soon the battery powering the neutralizers also went dead and the three began to plummet downward at a sharper and sharper angle, in spite of the Velantian's Herculean efforts to keep them aloft.

Some distance ahead of them the green of the jungle ended in a sharply cut line, beyond which there was a heavy growth of fairly open forest. A couple of miles of this and there was

the city, their objective—so near and yet so far!

"We'll either just make the timber or we just won't," Kinnison, mentally plotting the course, announced dispassionately. "Just as well if we land in the jungle, I think. It'll break our fall, anyway; and hitting solid ground inert at this speed might be pretty serious."

"If we land in the jungle we will never leave it"—Worsel's thought did not slow the incredible tempo of his prodigious pinions—"but it makes little difference whether I die now or later."

"It does to us, you pessimistic croaker!" flared Kinnison. "Forget that dying complex of yours for a minute! Remember the plan and follow it! We're going to strike the jungle, about ninety or a hundred meters in. If you come in with us you die at once, and the rest of our scheme is all shot to pieces. So when we let go, you go ahead and land in the woods. We'll join you there, never fear; our armor will hold long enough for us to cut our way through a hundred meters of any jungle that ever grew—even this one. Get ready, Bus. Leggo!"

THEY DROPPED. Through the lush succulence of close-packed upper leaves and tentacles they crashed—through the heavier, wooded main branches below, through to the ground. And there they fought for their lives; for those voracious plants nourished themselves not only upon the soil in which their roots were embedded, but also upon anything organic unlucky enough to come within reach. Flabby but tough tentacles encircled them; ghastly sucking disks, exuding a potent corrosive, slobbered wetly at their armor; knobbed and spiky bludgeons whanged against tempered steel as the monstrous organisms began dimly to realize that these particular titbits were

encased in something more resistant far than skin, scales, or bark.

But the Lensman and his giant companion were not quiescent. They came down oriented and fighting. Van-Buskirk, in the van, swung his frightful space ax as a reaper swings his scythe—one solid, short step forward with each swing. And close behind the Valerian strode Kinnison, his own flying ax guarding the giant's head and back.

Masses of that obscene vegetation crashed down upon their heads from above, revolting cupped orifices sucking and smacking; and they were showered continually with floods of the opaque, corrosive sap to the action of which even their armor was not entirely immune. But, hampered as they were and almost blinded, they struggled indomitably on; while behind them an ever-lengthening corridor of demolition marked their progress.

"Ain't we got fun?" grunted the Dutchman, in time with his swing. "But we're quite a team at that, chief—brains and brawn, huh?"

"Uh-huh," dissented Kinnison, his flying weapon a solid disk of steel to the eye. "Grace and poise; or, if you want to be really romantic, ham and eggs."

"Rack and ruin will be more like it if we don't break out before this con-founded goo eats through our armor. But we're making it—the stuff's thinning out and I think I can see trees up ahead."

"It is well if you can," came a cold, clear thought from Worsel, "for I am sorely beset. Hasten or I perish!"

At that thought the two patrolmen forged ahead in a burst of furious activity. Crashing through the thinning barriers of the jungle's edge, they wiped their lenses partially clear, glanced quickly about, and saw the Velantian. That worthy was "sorely beset" indeed. Six animals—huge, reptilian, but lithe and active—had him

down. So helplessly immobile was Worsel that he could scarcely move his tail; and the monsters were already beginning to gnaw at his scaly, armored hide.

"I'll put a stop to that, Worsel!" called Kinnison, referring to the fact, well known to all us moderns, that any real animal, no matter how savage, can be controlled by any wearer of the Lens. For, no matter how low in the scale of intelligence the animal is, the Lensman can get in touch with whatever mind the creature has and reason with it.

But these monstrosities, as Kinnison learned immediately, were not really animals. Even though of animal form and mobility, they were purely vegetable in motivation and behavior, reacting only to the stimuli of food and of reproduction. Weirdly and completely inimical to all other forms of created life, they were so utterly noiseless, so completely alien that the full power of mind and Lens failed entirely to gain rapport.

UPON that confusedly writhing heap the patrolmen flung themselves, terrible axes destructively a-swing. In turn, they were attacked viciously; but this battle was not long to endure. Van-Buskirk's first terrific blow knocked one adversary away, almost spinning end over end. Kinnison took out one, the Dutchman another, and the remaining three were no match at all for the humiliated and furiously raging Velantian. But it was not until the monstrosities had been gruesomely carved and torn apart, literally limb from hideous limb, that they ceased their insensately voracious attacks.

"They took me by surprise," explained Worsel, unnecessarily, as the three made their way through the night toward their goal, "and six of them at once were too much for me. I tried to hold their minds, but apparently they have none."

"How about the Overlords?" asked Kinnison. "Suppose they have received any of our thoughts? We patrolmen at least have been doing a lot of unguarded radiating lately."

"No," Worsel made positive reply. "The thought screen batteries, while small and of very little actual power, have, nevertheless, a very long service life. Now let us again go over the next steps of our plan of action."

Since no more untoward events marred their progress toward the Delgonian city, they soon reached it. It was for the most part dark and quiet, its somber buildings merely blacker blobs against a background of black. Here and there, however, were to be seen automotive vehicles moving about, and the three invaders crouched against a convenient wall, waiting for one to come along the "street" in which they were. Eventually one did.

As it passed them Worsel sprang into headlong, gliding flight, Kinnison's heavy knife in one gnarled fist. And as he sailed he struck—lethally. Before that luckless Delgonian's brain could radiate a single thought it was in no condition to function at all; for the head containing it was bouncing in the gutter. Worsel backed the peculiar conveyance along the curb and his two companions leaped into it, lying flat upon its floor and covering themselves from sight as best they could.

Worsel, familiar with things Delgonian and looking enough like a native of the planet to pass a casual inspection in the dark, drove the car. Streets and thoroughfares he traversed at reckless speed, finally drawing up before a long, low building, entirely dark. He scanned his surroundings with care, in every direction. Not a creature was in sight.

"All is clear, friends," he thought, and the three adventurers sprang to the building's entrance. The door—it had a door, of sorts—was locked, but Van-

Buskirk's ax made short work of that difficulty. Inside, they braced the wrecked door against intrusion. Then Worsel led the way into the unlighted interior. Soon he flashed his lamp about him and stepped upon a black, peculiarly marked tile set into the floor; whereupon a harsh, white light illuminated the room.

"Cut it, before somebody takes alarm!" snapped Kinnison.

"No danger of that," replied the Velantian. "There are no windows in any of these rooms; no light can be seen from outside. This is the control room of the city's power plant. If you can convert any of this power to your uses, help yourselves to it. In this building is also Delgon's closest approximation to a munitions plant. Whether or not anything in it can be of service to you is, of course, for you to say. I am now at your disposal."

While the Velantian was thinking these things Kinnison had been studying the panels and instruments. Now he and VanBuskirk tore open their armor—they had already learned that the atmosphere of Delgon, while not as wholesome for them as that in their suits, would, for a time at least, support human life—and wrought diligently with pliers, screw drivers, and other tools of the electrician. Soon their exhausted batteries were upon the floor beneath the instrument panel, greedily absorbing the electrical fluid from the busbars of the Delgonians.

"Now, while they're getting filled up, let's see what they mean by 'munitions' in these parts," Kinnison ordered. "Lead on, Worsel!"

## VII.

WITH WORSEL in the lead, the three interlopers hastened along a corridor, past branching and intersecting hallways, to a distant wing of the structure. There, it was evident, manufac-

turing of weapons was carried on; but a quick study of the queer-looking devices and mechanisms upon the benches and inside the storage racks lining its walls convinced Kinnison that the room could yield them nothing of permanent benefit. There were high-powered beam projectors, it was true; but they were so heavy that they were not even semiportable. There were also hand weapons of various peculiar patterns, but without exception they were ridiculously inferior to the DeLameters of the patrol in every respect of power, range, controllability, and storage capacity. Nevertheless, after testing them out sufficiently to make certain of the above findings, Kinnison selected an armful of the most powerful models and turned to his companions.

"Let's go back to the power room," he urged. "I'm nervous as a cat. I feel stark naked without my batteries; and if any one should happen to drop in there and do away with them, we'd be sunk without a trace."

Loaded down with Delgonian weapons, they hurried back the way they had come. Much to Kinnison's relief he found that his forebodings had been groundless; the batteries were still there, still absorbing myriawatt hour after myriawatt hour from the Delgonian generators. Staring fixedly at the innocuous-looking containers, he frowned in thought.

"Better we insulate those leads a little heavier and put the cans back in our armor," he suggested finally. "They'll charge just as well in place, and it doesn't stand to reason that this drain of power can go on for the rest of the night without *somebody* noticing it. And when that happens those Overlords are bound to take plenty of steps—the nature of none of which we can even guess at."

"We must have power enough now so that we can all fly away from any possible trouble," Worsel suggested.



"But that's just exactly what we are not going to do!" Kinnison declared, with finality. "Now that we've found a good charger, we aren't going to leave it until our accumulators are chockablock. It's coming in faster than full draft will take it out, and we're going to get a full charge if we have to stand off all the vermin of Delgon to do it."

Far longer than Kinnison had thought possible they were unmolested, but finally a couple of Delgonian engineers came to investigate the unprecedented shortage in the output of their completely automatic generators. At the entrance they were stopped, for no ordinary tools could force the barricade VanBuskirk had erected behind that portal. With leveled weapons the patrolmen stood, awaiting the expected attack. But none developed. Hour by hour the long night wore away, uneventfully. At daybreak, however, a storming party appeared and massive battering-rams were brought into play.

As the dull, heavy concussions reverberated throughout the building the patrolmen each picked up two of the weapons piled before them and Kinnison addressed the Velantian.

"Drag a couple of those metal benches across that corner and coil up behind them," he directed. "They'll be enough to ground any stray charges. If they can't see you they won't know you're here, so probably nothing much will come your way direct."

The Velantian demurred, declaring that he would not hide while his two companions were fighting his battle.

But Kinnison silenced him fiercely. "Don't be a fool!" the Lensman snapped. "One of these beams would fry you to a crisp in ten seconds, whereas the defensive fields of our armor could neutralize a thousand of them, from now on. Do as I say, and do it quick, or I'll beam you unconscious and toss you in there myself!"

REALIZING that Kinnison meant exactly what he said, and knowing that, unarmored as he was, he was utterly unable to resist either the Tellurian or their common foe, Worsel unwillingly erected his metallic barrier and coiled his sinuous length behind it. He hid himself just in time.

The outer barricade had fallen, and now a wave of reptilian forms flooded into the control room. Nor was this any ordinary investigation. The Overlords had studied the situation from afar, and this wave was one of heavily armed—for Delgon—soldiery. On they came, projectors fiercely aflame, confident in their belief that nothing could stand before their blasts.

But how wrong they were! The two repulsively erect bipeds before them neither burned nor fell. Beams, no matter how powerful, did not reach them.

Nor were these outlandish beings inoffensive. Utterly careless of the service life of the pitifully weak Delgonian projectors, they were using them at maximum drain and at extreme aperture—and in the resultant beams the Delgonian soldier slaves fell in scorched and smoking heaps. On came reserves, platoon after platoon, only and continuously to meet the same fate; for as soon as one projector weakened the invincibly armored man would toss it aside and pick up another. But finally the last commandeered weapon was exhausted and the beleaguered pair brought their own DeLameters—the most powerful portable weapons known to the military scientists of the Galactic Patrol—into play.

And what a difference! In *those* beams the attacking reptiles did not smoke or burn. They simply vanished in a blaze of flaming light, so did also the near-by walls and a good share of the building beyond! The Delgonian hordes having disappeared, VanBuskirk shut off his DeLameter.

Kinnison, however, left his on, an-

*Inertialess as he was, the buffetings of the Velantian affected him not at all— Then he simply expanded his thought screen—*



gling its beam sharply upward, blasting into fiery vapor the ceiling and roof over their heads, remarking: "While we're at it we might as well fix things so that we can make a quick get-away if we want to."

Then they waited. Waited, watching the needles of their meters creep ever closer to the "full-charge" marks; waited while, as they shrewdly suspected, the distant, cowardly hiding Overlords planned some other, more promising line of physical attack.

Nor was it long in developing. Another small army appeared, armored

this time; or, more accurately, advancing behind metallic shields. Knowing what to expect, Kinnison was not surprised when the beam of his DeLameter not only failed to pierce one of those shields, but did not in any way impede the progress of the Delgonian column.

"Well, we're all done here, anyway, as far as I'm concerned." Kinnison grinned at the Dutchman as he spoke. "My cans've been showing full back pressure for the last five minutes. How about yours?"

"Same here," VanBuskirk reported, and the two leaped lightly into the

Velantian's refuge. Then, inertialess all, the three shot into the air at such a pace that to the slow senses of the Delgonian slaves they simply disappeared. Indeed, it was not until the barrier had been blasted away and every room, nook, and cranny of the immense structure had been literally and minutely combed that the Delgonians—and through their enslaved minds the Overlords—became convinced that their prey had in some uncanny and unknown fashion eluded them.

NOW high in the air, the three troopers traversed, in a matter of minutes, the same distance that had cost them so much time and strife the day before. Over the monster-infected forest they sped, over the deceptively peaceful green lushness of the jungle, to slant down toward Worsel's thoughtproof tent. Inside that refuge they snapped off their thought screens and Kinnison yawned prodigiously.

"Working days and nights both is all right for a while, but it gets monotonous in time. Since this seems to be the only really safe spot on the planet, I suggest that we take a day or so off and catch up on our eats and sleeps."

They slept and ate; slept and ate again.

"The next thing on the program," Kinnison announced then, "is to clean out that den of Overlords. Then Worsel will be free to help us get going about our own business."

"You speak lightly indeed of the impossible," Worsel, again all glum despondency, reproved him. "I have already explained why the task is, and must remain, beyond our power."

"Yes, but you don't quite grasp the possibilities of the stuff we've got to work with now," the Tellurian replied. "Listen: you could never do anything because you couldn't see through or work through your thought screens.

Neither we nor you could, even now, enslave a Delgonian and make him lead us to the cavern, because the Overlords would know all about it 'way ahead of time and the slave would lead us anywhere else except to the cavern. However, one of us can cut his screen and surrender; possibly keeping just enough screen up to keep the enemy from possessing his mind fully enough to learn that the other two are coming along. The big question is—which of us is to surrender?"

"That is already decided," Worsel made instant reply. "I am the logical—in fact, the *only* one—to do it. Not only would they think it perfectly natural that they should overpower me, but also I am the only one of us three sufficiently able to control his thoughts so as to keep from them the knowledge that I am being accompanied. Furthermore, you both know that it would not be good for your minds, unaccustomed as they are to the practice, to surrender their control voluntarily to an enemy."

"I'll say it wouldn't!" Kinnison agreed, feelingly. "I might do it if I had to, but I wouldn't like it and don't think I'd ever quite get over it. I hate to put such a horrible job off onto you, Worsel, but you're undoubtedly the best equipped to handle it—and even you may have your hands full."

"Yes," the Velantian said, thoughtfully. "While the undertaking is no longer an absolute impossibility, it is difficult—very. In any event you will probably have to beam me yourselves, if we succeed in reaching the cavern. The Overlords will see to that. If so, do it without regret. Know that I expect it and am well content to die in that fashion. Thousands of better men than I am would be only too glad to be in my place, meaning what it does to all Velantia. Know also that I have already reported what is to occur, and that your welcome to Velantia is as

sured, whether or not I accompany you there."

"I don't think I'll have to kill you, Worsel," Kinnison replied, slowly, picturing in detail exactly what that steel-hard reptilian body would be capable of doing when, unshackled, its directing mind was completely taken over by an utterly soulless and conscienceless Overlord. "If we can't keep from going off the deep end, of course you'll get pretty tough and I know that you're hard to handle. However, as I told you back there, I think I can beam you unconscious without killing you. I may have to burn off a few scales, but I'll try not to do any damage that can't be repaired."

"If you can so stop me it will be wonderful indeed. Are we ready?"

They were ready. Worsel opened the door and in a moment was hurtling through the air, his giant wings arrowing him along at a pace no winged creature of Earth would even approach. And, following him easily at a little distance, floated the two patrolmen upon their inertialess drives.

DURING that long flight scarcely a thought was exchanged, even between Kinnison and VanBuskirk. To direct a thought at the Velantian was, of course, out of the question. All lines of communication with him had been cut; and, furthermore, his mind, able as it was, was being taxed to the ultimate cell in doing what he had set out to do. And the two patrolmen were reluctant to converse with each other, even upon their tight beams, radios, or sounders, for fear that some slight leakage of thought energy might reveal their presence to the ever-watchful Overlords. If this opportunity were lost, they knew, another chance to wipe out that hellish horde might never present itself.

Land was traversed, and sea; but

finally a stupendous range of mountains reared before them and Worsel, folding back his tireless wings, shot downward in a screaming, full-weight dive. In his line of flight Kinnison saw the mouth of a cave, a darker spot of blackness in the black rock of the mountain's side. Upon the ledged approach there lay a Delgonian—a guard or lookout, of course.

The Lensman's DeLameter was already in his hand, and at sight of the guardian reptile he sighted and fired in one incredibly fast motion. But, rapid as it was, it was still too slow. The Overlords had seen that the Velantian had companions of whom he had been able to keep them in ignorance theretofore.

Instantly, Worsel's wings again began to beat, bearing him off at a wide angle; and, although the patrolmen were insulated against his thought, the meaning of his antics was very plain. He was telling them in every possible way that the hole below was *not* the cavern of the Overlords, that it was over this way, that they were to keep on following him to it. Then, as they refused to follow him, he rushed upon Kinnison in mad attack.

"Beam him down, Kim!" VanBuskirk yelled. "Don't take any chances with that bird!" He leveled his own DeLameter.

"Lay off, Bus!" the Lensman snapped. "I can handle him—a lot easier out here than on the ground."

And so it proved. Inertialess as he was, the buffetings of the Velantian affected him not at all; and when Worsel coiled his supple body around him and began to apply pressure, Kinnison simply expanded his thought screen to cover them both, thus releasing the mind of his temporarily inimical friend from the Overlord's grip. Instantly the Velantian became himself, snapped on his own shield, and the three continued,

as one, their interrupted downward course.

Worsel came to a halt upon the ledge, beside the practically incinerated corpse of the lookout, knowing, unarmored as he was, that to go farther meant sudden death. The armored pair, however, shot on into the gloomy passage. At first they were offered no opposition. The Overlords had had no time to muster an adequate defense. Scattering handfuls of slaves rushed them, only to be blasted out of existence as their hand weapons proved useless against the armor of the Galactic Patrol. Defenders became more numerous as the cavern itself was approached; but neither were they allowed to stay the patrolmen's progress. Finally, a palely shimmering barrier of metal appeared to bar their way. Its fields of force neutralized or absorbed the blasts of the DeLameters, but its material substance offered but little resistance to a thirty-pound sledge swung by one of the strongest men ever produced by any planet colonized by the humanity of Earth.

NOW they were in the cavern itself—the sanctum sanctorum of the Overlords of Delgon. There was the hellish torture screen, with its burden of mental and physical pain. There was the horribly avid audience, now milling about in a mob frenzy of panic. There, upon a raised balcony, were the “big shots” of this nauseous clan; now doing their utmost to marshal some force able to cope effectively with this unheard-of violation of their age-old immunity.

A last wave of Delgonian slaves hurled themselves forward, futile projectors furiously aflame, only to disappear in the DeLameters' fans of force. The patrolmen hated to kill those mindless slaves, but it was a nasty job that had to be done. The slaves out of the way, those ravening beams bored on into the massed Overlords.

And now Kinnison and VanBuskirk killed, if not joyously, at least relentlessly, mercilessly, and with neither sign nor sensation of compunction. For this unbelievably monstrous tribe needed killing, root and branch. Not a scion or shoot of it should be allowed to survive, to continue to contaminate the civilization of the galaxy. Back and forth, to and fro, up and down—swept the raging beams of the DeLameters, playing on until in all the vast volume of that gruesome chamber nothing lived save the two grim figures in its portal.

Assured of this fact, but with DeLameters still in hand, the two destroyers retraced their way to the tunnel's mouth, where Worsel anxiously awaited them. Lines of communication again established, Kinnison informed the Velantian of all that had taken place, and the latter gradually cut down the power of his thought screen. Soon it was at zero strength and he reported jubilantly that for the first time in untold ages, the Overlords of Delgon were off the air!

“But surely the danger isn't over yet!” protested Kinnison. “We couldn't have got them all in this one raid. Some of them must have escaped, and there must be other dens of them on this planet somewhere?”

“Possibly; possibly.” The Velantian waved his tail airily—the first sign of joyousness he had shown. “But their power is broken, definitely and forever. With these new screens, and with the arms and armament which, thanks to you, we can now fabricate, the task of wiping them out completely will be comparatively simple. Now you will accompany me to Velantia where, I assure, the resources of the planet will be put solidly behind you in your own endeavors. I have already summoned a space ship. In less than twelve days we will be back in Velantia and at work upon your projects. In the meantime——”



"Twelve *days!* Holy jumping rockets!" VanBuskirk exploded.

Kinnison said, "Sure—you forget that they knew nothing of our free drive. We'd better hop over and get our lifeboat, I think. It's not so good, either way, but in our own boat we'll be open to detection less than two hours, as against twelve days in the Velantians'. And the pirates may be here any minute. It's as good as certain that their ship will be stopped and searched long before it gets back to Velantia, and if we were aboard it would be just too bad."

"And, since the crew knows about us, the pirates soon will, and it'll be just too bad, anyway," VanBuskirk reasoned.

"Not at all," interposed Worsel. "The few of my people who know of you have been instructed to seal that knowledge. I must admit, however, that I am greatly disturbed by your conceptions of these pirates of space. You see, until I met you I knew nothing more of the pirates than I did of your patrol."

"What a world!" VanBuskirk exclaimed. "No patrol and no pirates! But at that, life might be simpler without both of them and without the free space drive—more like it used to be in the good old airplane days that the novelists rave about."

"Of course, I could not judge as to that." The Velantian was very serious. "This in which we live seems to be an out-of-the-way section of the galaxy; or it may be that we have nothing that the pirates want."

"More likely it's simply that, like the patrol, they haven't got organized into this district yet," suggested Kinnison. "There are so many millions of solar systems in the galaxy that it will probably be thousands of years yet before the patrol gets into them all."

"But about these pirates," Worsel went back to his point. "If they have such minds as those of the Overlords,

they will be able to break the seals of our minds. However, I gather from your thoughts that their minds are not of that strength?"

"Not so far as I know," Kinnison replied. "You folks have the most powerful brains I ever heard of, short of the Arisians. And speaking of mental power, you can hear thoughts a lot farther than I can, even with my Lens or with this pirate receiver I've got. See if you can find out whether there are any pirates in space around here, will you?"

WHILE the Velantian was concentrating, VanBuskirk asked: "Why, if his mind is so strong, could the Overlords put him under so much easier than they could us 'weak-minded' humans?"

"You are confusing 'mind' with 'will,' I think. Ages of submission to the Overlords made the Velantians' will power zero, as far as the bosses were concerned. On the other hand, you and I could raise stubbornness to sell to most people. In fact, if the Overlords had succeeded in really breaking us down, back there, I believe that we would have been insane for the rest of our lives."

"Probably you're right. We break, but don't bend, huh?"

Then the Velantian was ready to report. "I have scanned space to the nearer stars—some eleven of your light years—and have encountered no intruding entities," he announced.

"Eleven light years—what a range!" Kinnison exclaimed. "However, that's only a shade over two minutes for a pirate ship at full blast. But we've got to take a chance sometime, and the quicker we get started the sooner we'll get back. We'll pick you up here, Worsel. No use in you going back to your tent—we'll be back here long before you could reach it. You'll be safe enough, I think, especially with our spare De-

Lameters. Let's get going, Bus!"

Again they shot into the air; again they traversed the airless depths of interplanetary space. To locate the temporary tomb of their lifeboat required only a few minutes, to disinter her only a few more. Then again they braved detection in the void; Kinnison tense at his controls, VanBuskirk in strained attention listening to and staring at his unscramblers and detectors. But the ether was still blank as they materialized in an inertialess landing beside the waiting Velantian.

"All right, Worsel, snap it up!" Kinnison called, and went on to VanBuskirk, "Now, you big, flat-footed Valerian space hound, I hope that that spaceman's god of yours will see to it that our luck holds good for just seven minutes more. We've had more luck already than we had any right to expect, but we can put a little more to most gosh-awful good use!"

"Noshabkeming *does* bring spacemen luck," insisted the giant, grimacing a peculiar salute toward a small, golden image set inside his helmet, "and the fact that you warty, runty little space fleas of Tellus haven't got sense enough to know it, doesn't change matters at all."

"That's tellin' 'em, Bus!" Kinnison applauded. "But if it helps charge your batteries, go to it. Ready to blast! Lift!"

The Velantian had come aboard; the tiny air lock was again tight, and the little vessel shot away from Delgon toward far Velantia. And still the ether remained empty as far as the detectors could reach. Nor was this fact surprising, in spite of the Lensman's fears to the contrary; for the patrolmen had given the pirates such an extremely long line to cover that many days must yet elapse before the minions of Boskone would get around to visit that unimportant, unexplored, and almost unknown solar system.

EN ROUTE to his home planet Worsel got in touch with the crew of the Velantian vessel already in space, ordering them to return to port posthaste and instructing them in detail what to think and how to act should they be stopped and searched by one of Boskone's raiders. By the time these instructions had been given, Velantia loomed large beneath the flying midget. Then, with Worsel as guide, Kinnison drove over a mighty ocean upon whose opposite shore lay the great city in which Worsel lived.

"But I would like to have them welcome you as befits what you have done, and have you go to the dome!" mourned the Velantian. "Think of it! You have done a thing which for ages the massed power of the planet has been trying vainly to accomplish, and yet you insist that I alone take full and complete credit for it!"

"I don't insist on any such thing," argued Kinnison, "even though it's practically all yours, anyway. I insist only on your keeping us and the patrol out of it, and you know as well as I do why you've got to do that. Tell them anything else you want to. Say that a couple of pink-haired Chickladorians helped you and then beat it back home. *That* planet's far enough away so that if the pirates chase them they'll get a real run-for their money. After this blows over you can tell the truth—but *not until then*.

"And as for us going to the dome for a grand hocus-pocus, that is completely and definitely *out*. We're not going anywhere except to the biggest space yard you've got. You're not going to give us anything except a lot of material and a lot of highly trained help that can keep their thoughts sealed.

"We've got to build a lot of heavy stuff fast; and we've got to get started on it just as quickly as the gods of space will let us!"

## VIII.

WORSEL knew his council of scientists, as well he might, since it developed that he himself ranked high in that select circle. True to his promises, the largest space port of the planet was immediately emptied of its customary personnel, which was replaced the following morning by an entirely new group of workmen.

Nor were these replacements ordinary laborers. They were young, keen, and highly trained, taken, to a man, from behind the thought screens of the scientists. It is true that they had no inkling of what they were to do, since none of them had ever dreamed of the possibility of such engines as they were to be called upon to construct.

But, upon the other hand, they were well versed in the fundamental theories and operations of mathematics, and from pure mathematics to applied mechanics is but a step. Furthermore, they had *brains*—knew how to think logically, coherently, and effectively, and needed neither driving nor supervision—only instruction. And best of all, practically every one of the required mechanisms already existed, in miniature, within the *Brittania's* lifeboat, ready at hand for their dissection, analysis, and enlargement. It was not lack of understanding which was to slow up the work; it was simply that the planet did not boast machine tools and equipment large enough or strong enough to handle the necessarily huge and heavy parts and members required.

While the construction of this heavy machinery was being rushed through, Kinnison and VanBuskirk devoted their efforts to the fabrication of an ultra-sensitive receiver, tunable to the pirates' scrambled wave bands. With their exactly detailed knowledge, and with the cleverest technicians and the choicest equipment of Velantia at their disposal, the set was soon completed.

AST--6

Kinnison was giving its exceedingly delicate coils their final alignment when Worsel wriggled blithely into the radio laboratory.

"Hi, Kimball Kinnison of the Lens!" he called gayly. Throwing some twenty feet of his serpent's body in lightning loops about a convenient pillar, he made a horizontal bar of the rest of himself and dropped one wing tip to the floor. Then, nonchalantly upside down, he thrust out three or four eyes and curled their stalks over the Lensmen's shoulder, the better to inspect the results of the mechanics' efforts. Gone was the morose, pessimistic, death-haunted Worsel who had wrought and fought beside the armored pair upon fantastically inimical Delgon. This was a new Worsel entirely; gay, happy, carefree, and actually frolicsome—if you can image a thirty-foot-long, crocodile-headed, leather-winged python as being frolicsome!

"Hi, your royal snakeship!" Kinnison retorted in kind. "Still here, huh? Thought you'd be back on Delgon by this time, cleaning up the rest of that mess."

"The equipment is not ready, but there's no hurry about that." The playful reptile unwrapped ten or twelve feet of tail from the pillar and waved it airily about. "Their power is broken; their race is done. You are about to try out the new receiver?"

"Yes—going out after them right now." Kinnison began deftly to manipulate the micrometric verniers of his dials.

EYES fixed upon meters and gauges, he listened—listened—increased his power and listened again. More and more power he applied to his apparatus, listening continually. Suddenly he stiffened, his hands becoming rock-still. He listened, if possible even more intently than before; and as he listened his face

grew grim and granite-hard. Then the micrometers began again, crawlingly, to move, as though he were tracing a beam.

"Bus! Hook on the focusing beam antenna!" he snapped. "It's going to take every milliwatt of power we've got in this hook-up to tap his beam, but I think that I've got Helmuth direct, instead of through a pirate-ship relay!"

Again and again he checked the readings of his dials and of the directors of his antenna; each time noting the exact time of the Velantian day.

"There! As soon as we get some time, Worsel, I'd like to work out these figures with some of your astronomers. They'll give me a right line through to Helmuth's headquarters—I hope. Some day, if I'm spared, I'll get another!"

"What kind of news did you get?" asked VanBushkirk.

"Good and bad both," replied the Lensman. "Good in that Helmuth doesn't believe that we stayed with his ship as long as we did. He's a suspicious devil, you know, and is pretty well convinced that we tried to run the same kind of a blazer on him that we did the other time. Since he hasn't got enough ships on the job to work the whole line, he's concentrating on the other end. That means that we've got plenty of days left. The bad part of it is that they've got four of our boats already and are bound to get more. Lord, how I wish I could call the rest of them! Some of them could certainly make it here before they got caught."

"Might I then offer a suggestion?" asked Worsel, suddenly diffident.

"Surely!" the Lensman replied in surprise. "Your ideas have never been any kind of poppycock. Why so bashful all at once?"

"Because this one is so—ah—so peculiarly personal, since you men regard so highly the privacy of your minds. Our two sciences, as you have already observed, are vastly different. You are

far beyond us in mechanics, physics, chemistry, and the other applied sciences. We, on the other hand, have delved much deeper than have you into psychology and the other introspective studies. For that reason I know positively that the Lens you wear is capable of enormously greater things than you are at present able to perform. Of course, I cannot use your Lens directly, since it is attuned to your own ego. However, if the idea appeals to you, I could, with your consent, occupy your mind and use your Lens to put you *en rapport* with your fellows. I have not volunteered the suggestion before because I know how averse your mind is to any foreign control."

"Not necessarily to foreign control," Kinnison corrected him. "Only to *enemy* control. The idea of friendly control never occurred to me. That would be an entirely different breed of cats. Go to it!"

KINNISON relaxed his mind completely, and that of the Velantian came welling in, wave upon friendly, surging wave of benevolent power. And not only—or not precisely—power. It was more than power; it was a calm, cool, placid *certainly*, a depth and clarity of perception that Kinnison in his most cogent moments had never dreamed a possibility. The possessor of that mind knew things, cameo-clear in microscopic detail, which the keenest minds of Earth could perceive only as chaotically indistinct masses of mental light and shade, of no recognizable pattern whatever!

"Give me the thought pattern of him with whom you wish first to converse," came Worsel's thought, this time from deep within the Lensman's own brain.

Kinnison felt a subtle thrill of uneasiness at that new and ultra-strange dual personality, but thought back steadily, "Sorry—I can't."

"Excuse me, I should have known

that you cannot think in our patterns. Think, then, of him as a person—an individual. That will give me, I believe, sufficient data."

Into the Earthman's mind there leaped a picture of Henderson, sharp and clear. He felt his Lens actually tingle and throb as a concentration of vital force such as he had never known poured through his whole being and into that almost-living creation of the Arisians, and immediately thereafter he was in full mental communication with the chief pilot of the ill-fated *Brittania*! And there, seated across the tiny mess table of their lifeboat, was Thorndyke, the master technician.

Henderson came to his feet with a yell as the telepathic message bombarded into his brain, and it required several seconds to convince him that he was not the victim of space insanity or suffering from any other form of hallucination. Once convinced, however, he acted. His lifeboat shot toward far Velantia at maximum blast.

Then: "Nelson! Allerdyce! Thompson! Jenkins! Uhlenhuth! Smith! Chatway——" Kinnison called the roll of the survivors.

Nelson, the *Brittania's* communications officer, answered his captain's call. So did Allerdyce, the juggling quartermaster. So did Uhlenhuth, a technician. So did those in three other boats. Two of these three were apparently well within the danger zone, and might get nipped in their dash, but their crews elected without hesitation to take the chance. Four boats, it was already known, had been captured by the pirates. The remaining eight were either so distant as to be out of range of even the Worsel-driven Lens, or they had been taken by pirates who had not yet reported to Helmuth.

"Eight out of twenty," Kinnison mused. "Not so good, but it could have been a lot worse. They might very well

have taken us all by this time."

Then he turned to the Velantian, who had withdrawn his mind as soon as its task was done. "Thanks, Worsel," he said simply. "Some of those lads coming in have got plenty of just what it takes, and *how* we can use them!"

ONE BY ONE the lifeboats of the *Brittania* came into port, where their crews were welcomed briefly, but feelingly, before they were put to work. Nelson, the communications officer, among the last to arrive, was to the Lensman particularly welcome.

"Nels, we need you badly," Kinnison informed him as soon as greetings had been exchanged. "The pirates have a beam, carrying a peculiarly scrambled wave that they can receive and decode through any kind of ordinary blanket-ing interference, and you're the best man of us all to study their system. Some of these Velantian scientists can probably help you a lot on that—any race that can develop a screen against thought figures to know more than somewhat about vibration in general. We've got working models of the pirates' instruments, so that you can figure out their patterns and formulas. That ought be simple.

"When you've done that, I want you and your Velantians to design something that will scramble all the pirates' communicator beams in space, from here to the near rim of the galaxy. If you can fix things so that they can't talk, any more than we can, it'll help a lot, believe me!"

"QX, chief, we'll give it the works." And the radio man called for tools, apparatus and electricians.

Then throughout the great space port the many Velantians and the handful of patrolmen labored mightily, side by side, and to very good effect indeed. Slowly, the port became ringed about by, and studded everywhere with monstrous



mechanisms. Everywhere there were projectors: refractory-throated demons ready to vomit forth every force known to the expert technicians of the patrol. There were absorbers, too, backed by their bleeder resistors, air gaps, ground rods, and racks for discharged accumulators. There, too, were receptors and converters for the cosmic energy which was to empower many of the devices. There were, of course, atomic motor generators by the score, and battery upon battery of gigantic accumulators. And Nelson's high-powered scrambler was ready to go to work.

These machines appeared crude, rough, unfinished; for neither time nor labor had been wasted upon nonessentials. But inside each one the moving parts fitted with micrometric accuracy and with hair-spring balance. All, without exception, functioned perfectly.

At Worsel's call, Kinnison climbed up out of a great beamproof pit, the top of whose wall was practically composed of tractor-beam projectors. Pausing only to make sure that a sticking switch on one of the screen-doom generators had been replaced, he hurried to the heavily armored control room, where his little force of fellow patrolmen awaited him.

"They're coming, boys," he announced. "You all know what to do. There are a lot more things that we could have done if we'd had more time, but as it is we'll just go to work on them with what we've got." And Kinnison, again all brisk captain, bent over his instruments.

In the ordinary course of events the pirate would have flashed up to the planet with spy rays out and issuing a peremptory demand for the planet to show a clean bill of health or to surrender instantly such fugitives as might lately have landed upon it. But Kinnison did not—could not—wait for that. The spy rays, he knew, would reveal the presence of his armament; and such

armament most certainly did not belong to this planet. Therefore, the instant that the pirate ship came within range of his detectors he acted; and forthwith everything happened at once, with furious swiftness.

A tracer lashed out, the pilot ray of the rim battery of extraordinarily powerful tractors. Under the urge of those beams the inertialess ship flashed toward their center of action, which was the geometrical center of the space port's deep rayproof pit. At the same moment Nelson's scrambler burst into activity, a dome-screen against cosmic-energy intake, and a full circle of superpowered attacking rays.

ALL THESE THINGS occurred in the twinkling of an eye, and the vessel was being slowed down by the atmosphere of Velantia before her startled commander could even realize that he was being attacked. Only the presence of automatically reacting defensive screens saved that ship from instant destruction; but they did so save it and in seconds the pirates' every weapon was furiously ablaze.

In vain. The defenses of that pit could take it. They were driven by mechanisms easily able to absorb the output of any equipment mountable upon a mobile base, and to his consternation the pirate found that his cosmic-energy intake was at, and remained at, zero. He sent out call after call for help, but could not make contact with any other pirate station. Ether and sub-ether alike were closed to him; his signals were blanketed completely. Nor could his drivers, even though operating at ruinous overload, move him from the geometrical center of that incandescently flaming pit, so inconceivably rigid were the tractors' clamps upon him.

And soon his power began to fail. His vessel, designed to operate upon cosmic-energy intake, carried only

enough accumulators for stabilization of power flow, an amount ridiculously inadequate for a combat as profligate of energy as this. But, strangely enough, as his defense weakened, so lessened the power of the attack. It was no part of the Lensman's plan to destroy this superdreadnaught of the void.

"That was one good thing about the old *Brittania*," he gritted as he cut down, step by step, the power of his beams, "nobody could block her off from what power she had!"

Soon the stored-up energy of the battleship was exhausted and she lay there, quiescent. Then giant pressers went into action and she was lifted over the wall of the pit, to settle down in an open space beside it—open, but still under the domes of force.

Kinnison had no needle rays as yet, the time at his disposal having been sufficient only for the construction of the absolutely essential items of equipment. Now, while he was debating with his fellows as to what part of the vessel to destroy in order to wipe out its crew, the pirates themselves ended the debate. Ports yawned in the vessel's armored side and they came out fighting.

For they were not a breed to die like rats in a trap, and they knew that to remain inside their vessel was to die whenever and however their captors willed. They knew also that die they must if they could not conquer. Their surrender, even if it should be accepted, would mean only a somewhat later death in the lethal chambers of the law. In the open, they could at least take some of their foes with them.

Furthermore, not being men as we know men, they had nothing in common with either human beings or Velantians. Both of them were vermin, as they themselves were to the beings manning this surprisingly impregnable fortress here in this waste corner of the galaxy. Therefore, space-hardened veterans all,

they fought, with the insane ferocity and desperation of the ultimately last stand; but they did not conquer. Instead, and to the last man, they died.

AS SOON AS the battle was over, before the interference blanketing the pirates' communicators was cut off, Kinnison went through the captured vessel, destroying the headquarters visiplates and every automatic sender which could transmit any kind of a message to any pirate base.

Then the interference was stopped; the domes were released; the ship was removed from the field of operations. Then, while Thorndyke and his reptilian aides—themselves now radio experts of no mean attainments—busied themselves at installing a high-powered scrambler aboard her, Kinnison and Worsel scanned space in search of more prey. Soon they found it, more distant than the first one had been—two solar systems away—and in an entirely different direction. Tracers and tractors and interference and domes of force again became the order of the day. Projectors again raved out in their incandescent might, and soon another immense cruiser of the void lay beside her sister ship. Another and another; then, for a long time, space was blank.

The Lensman then energized his ultra-receiver, pointing his antenna carefully into the galactic line to Helmuth's base, as laid down for him by the Velantian astronomers. Again, so tight and hard was Helmuth's beam, he had to drive his apparatus so unmercifully that the tube noise almost drowned out the signals, but again he was rewarded by hearing faintly the voice of the pirate director of operations.

"—four vessels, all within or near one of those five solar systems, have ceased communicating; each cessation being accompanied by a period of blanketing interference of a pattern never before

registered. You two vessels who are receiving these orders are instructed to investigate that region with the utmost care. Go with screens out and everything on the trips, and with automatic recorders set on me here.

"It is not believed that the patrol has anything to do with this, as ability has been shown transcending anything it has been known to possess. As a working hypothesis it is assumed that one of those solar systems, hitherto practically unexplored and unknown, is, in reality, the seat of a highly advanced race, which perhaps has taken offense at the attitude or conduct of our first ship to visit them. Therefore, proceed with extreme caution, with a thorough spy-ray search at extreme range before approaching at all. If you land, use tact and diplomacy instead of the customary tactics. Find out whether our ships and crews have been destroyed, or are only being held. And remember, automatic reporters on at all times. Helmuth, speaking for Boskone—off!"

For minutes Kinnison manipulated his micrometer in vain. He could not get another sound.

"What are you trying to get, Kim?" asked Thorndyke. "Wasn't that enough?" The message had been rebroadcast to the minds of the others by Worsel, as fast as it had entered the Lensman's ears.

"No, that's only half of it," Kinnison returned. "Helmuth's nobody's fool. He's certainly trying to plot the boundaries of our interference, and I want to see how he's coming out with it. But no dice. He's so far away and his beam's so hard that I can't work him unless he happens to be talking almost directly toward us. Well, it won't be long now until we'll give him some real interference to plot. Now we'll see what we can do about those two other ships that are heading this way. On your toes, everybody."

CAREFULLY as those two ships investigated, and sedulously, as they sought to obey Helmuth's instructions, all their precautions amounted to exactly nothing. As ordered, they began a spy-ray survey at extreme range; but even at that range Kinnison's tracers were effective and those two ships also ceased communicating in a blaze of interference. Then recent history repeated itself. The details were changed somewhat, since there were two vessels instead of one; but the pit was of ample size to accommodate two ships, and the tractors could hold two as well and as rigidly as one. The conflict was a little longer, the beaming a little hotter and more coruscant, but the ending was the same. Scramblers were quickly installed and Kinnison addressed his men, already in the ships.

"Well, we're about ready to shove off again. Running away has worked twice so far, with very good results—once in the old *Brittania*, and once in the pirate's own ships. It should work again, if we can ring in enough variations on the theme to keep Helmuth guessing a while longer. Maybe, if the supply of pirate ships keeps up, we'll be able to make Helmuth furnish us transportation all the way back to base!

"Here's the idea. We've got six ships, and there's enough of us to drive them. Some of the younger Velantians have joined us, in spite of the fact that I've told them the chances are against them ever getting back. Enough of them, in fact, to make up almost full crews of us all. But six ships isn't enough of a squadron to fight through the fleets that Helmuth will have organized if we go in a body. So we'll spread out radially, covering thousands of parsecs before we get halfway to base, and broadcasting every watt of interference we can put out all along the way, in as many different shapes and powers as our apparatus will permit. We can't talk to each other, of course, but nothing

else can talk anywhere in the same sector of the galaxy, either, and that will give us the edge. Each ship will be on its own, as we were before in the boats; the big difference being that we'll be in superdreadnaughts instead of lifeboats.

"Now, Worsel, if the pirates check up and follow the disturbance we are going to make they won't bother you folks at all. In fact, if they ever succeed in finding the center of that interference there will be nothing there except empty space. But if they don't follow us—and Helmuth is apt to insist upon a thorough study of this region before he does anything else—you folks are due for an inspection; and the next inspection will mean a real battle instead of a slaughter. The first spy ray will reveal this stuff here. But I don't suppose you want to hide it or destroy it?"

"We do not," the Velantian replied, positively. "Let them come, in whatever force they care to bring. The more that attack here, the less there will be to halt your progress. This armament represents the best of that possessed by

both your patrol and the pirates, with improvements developed by your scientists and ours in full cooperation. We understand thoroughly its construction, operation, and maintenance. You may rest assured that the pirates will never levy tribute upon us, and that any pirate visiting this system will remain in it, permanently!"

"At-a-snake, Worsel—long may you wiggle!" Kinnison exclaimed. Then, more seriously, "Maybe, after this is all over, I'll see you again sometime. If not, good-by. Good-by, all Velantia! All set, boys? Clear ether and light landings to you all! Blast off!"

Six ships, once pirate craft, now vessels of the Galactic Patrol, hurled themselves into and through Velantian air, into and through interplanetary space, out into the larger, wider, more unobstructed emptiness of the interstellar void. Six, each broadcasting with prodigious power and volume an all-inclusive interference through which no pirate communicator or visiray beam could possibly be driven!

(TO BE CONTINUED.)

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# A MENACE IN

*Nothing could appear more  
harmless than those eddying  
dust motes—yet——*

by Raymond Z. Gallun

**M**ACDOWD looked as though he was about ready to crack. His face was like molded chalk behind the transparent curve of his oxygen helmet. The pupils of his eyes were dilated with fear that was close to hysteria, as he gazed from a port of the conning tower and out across the desolate expanse where the space ship was grounded.

"Paxtonia is just another name for hell!" he whined into his ether phone, addressing his two companions. "It's just a broken piece of an inhabited world that exploded maybe ten billion years ago! It was shot away from that world's parent star! Why did it have to wander into our solar system, and establish itself in an orbit around our sun? Nothing could live on it except the spirit of death!

"That's what it must be—the spirit of death! Those ships that blew up when they got too close to Paxtonia—Some smart people think that maybe there's an intelligent agent here who did that by exploding the old-type rocket fuel. But there's nothing here that anybody can find, except the ruins of buildings and machines, and a lot of empty silence! Still, a week ago there were twelve men in this expedition—and now there are only three of us left alive. Please! There isn't any sense in our staying on Paxtonia! We've got to get out of this devil's paradise—at once!"

"Shut up, MacDowd!" Pilot Al

Kerny, big and bearlike and brave, but not possessing the mental keenness of a scientist, growled emphatically. "You joined this outfit of your own free will, to help do a job that's got to be done! Until we find out what makes Paxtonia so dangerous, and until some way is figured out to combat this condition, no space ships that come into this vicinity will be safe, in spite of the new, and less easily detonated, rocket fuel. Our lives don't balance against thousands of other lives. Dr. Rolf and you and I are sticking, MacDowd!"

Dr. Kurt Rolf, wispy old savant, and since the passing of his superiors, chief of the Montridge expedition, was about to add a few words of his own to Kerny's fierce declarations, when tragedy was repeated.

MacDowd gave an anguished start. He gasped, and his gloved hands clutched and clawed at the chest plates of his space suit. Then he slumped to the floor of the conning tower.

As in the case of previous tragedies, there hadn't been the slightest visible or audible warning of the approach of danger. But when Kerny and Rolf bent over the crumpled body, it was a corpse. MacDowd was the tenth victim of the unknown, the incomprehensible.

For a moment Al Kerny's massive form seemed to wilt with weariness and discouragement. His head sagged forward inside his helmet, as he looked out over the plain on which the space ship rested. Paxtonia, which, when it was



# MINIATURE



*"How could you expect  
me—any one—to build a  
Scarab no bigger than a  
sand grain?"*

drifting into the solar system, an astronomer named Paxton had discovered with his telescope, was shaped like a crude wedge, or like a bomb fragment. The plain was the top of the wedge, and was a segment of the sur-

face of the world that had been shattered.

Its airless expanse was crusted with utterly dry loam, baked and gray under the merciless sun of the void. Here were visible the remnants of ancient vegeta-

tion. And Kerny could see, here, things which would have thrilled the heart of any archaeologist—vast, broken domes of hewn stone, which might once have imprisoned air and water in their interiors, and gigantic, moveless engines and machines—all of them belonging to an age of incredible antiquity.

ON THE DOMES, carved in bas-relief, were many representations of the people who had created all these wonders. The carved figures stood erect, like men, but they were very slender and attenuated. Their eyes, set in their triangular heads, were large and protruding. But like the things around them, the members of this graven host were lifeless and incapable of inflicting harm—impassive denials of the fact that somewhere among the débris of a wrecked civilization there was a malefic something that seemed to possess the powers of black magic.

"I'm sorry, MacDowd," Kerny muttered to the corpse. "I guess you were right. We should have got out of here. Even wearing space suits all the time doesn't seem to help. We——"

Dr. Rolf gripped Kerny's arm in sudden realization. "Al!" he cried harshly, and the small radios, or ether phones, by which spacemen communicate when sealed in vacuum armor, transmitted his voice to his companion. "Observe that gauge, please! The air pressure—it is falling! They—it—whatever the cause of so much murder may be—has invaded the ship—pierced a slight opening in the hull, somehow! It is not that the air is leaking out that should worry us, for there is plenty in the reserve drums. It is that the unknown threat is here, around us and invisible, at this very instant doubtless making ready to strike us down! MacDowd was the first man to die inside the ship. That is additional proof!"

"Shall we leave Paxtonia, then?" Kerny questioned anxiously.

The scientist's thin face was working with emotion. He yanked a proton pistol from the belt around his bulky attire, and sent a blue cone of flame belching from its maw.

"No!" he shouted, as he continued to battle the unseen foe which he knew was near. "There is not a chance to do that! It is doubtful that we could even get the ship into space before we were killed. We must stay and try to think of a plan! The war turret ahead—We must go there and lock ourselves inside! There's ten-inch dural steel on roof and floor and walls. If the hidden ones can bore through the hull of the ship they can doubtless penetrate that armor, too, but doing so will doubtless take considerable time."

Al Kerny, big and powerful, was not capable of the intricate thinking and deliberate action which characterizes some men. Yet his mind could work with lightning rapidity, and his responses were swift and cool. What his more erudite companion had just said brought him realization.

The things he did now he seemed to do all at once, efficiently and without lost motion. He jerked his proton pistol from his holster, and, emulating Rolf, sent its fiery cone spraying and bobbing in every direction.

At the same time he stooped and jerked the body of MacDowd, which had little weight here on tiny Paxtonia, up under one arm. To this burden he added a chest, about a yard long and two feet broad, which had reposed on a steel rack over the intricate control mechanisms of the space ship.

Dr. Rolf and he rushed from the conning tower and along a corridor which led to the war turret forward, with their proton pistols active. What narrow escapes they had in their flight to this refuge, they could not have observed or guessed. Inside the turret, they swung the ponderous, air-tight door shut and worked the locking mechanism.

HERE all was heavy, tomblike quiet, which seemed to magnify the throb of their speeding pulses. A great rocket-torpedo projector, ugly and capable when pitted against a tangible foe, gleamed slumberously before the sealed firing port in the curved wall. Bars of sunshine, slanting from small bull's-eye windows, armored with ten-inch glass almost as hard as diamond and as tough as Damascus steel, made golden paths through the dust floating in the air.

Nothing could appear more harmless than those lazily eddying motes; yet at sight of them both Rolf and Kerny were gripped by a vague, cold suspicion that among those specks might drift the instruments of sudden, ghastly extinction. How could one be sure that, during the instant that the massive door was open, the impalpable essence of death had not slipped through, into the war turret?

The two men, possessed of the same thought, which had come to them both by a process of parallel reasoning, acted in an identical manner. Their proton beams flared out, lashing the dust particles into violent motion, and reducing them to fragments too fine to be visible, even if magnified a thousand diameters. The entire atmosphere within the war turret was submitted to the sterilizing action of the beams. Any living thing in the paths of the protonic storms from the pistols, must surely have been destroyed.

"Perhaps for the present we are safe," Kurt Rolf panted in his usual stilted manner of speech. "We must have missed by only a very little the same fate that came to MacDowd."

Al Kerny had lowered the chest he carried, and the body of MacDowd, to the floor. Together, he and his companion stripped the space suit and clothing from the corpse. Except for a tiny hole, which must have been made by something much finer than a needle, the vacuum armor was intact. This punc-

ture penetrated the heavy metal chest plating of the suit.

MacDowd's flesh was livid. There was a minute, reddish pin prick over his heart. That was all. He had died as had the others before him. Delicate tests of the blood of previous victims had revealed the nature of the killing agent. It was a protein poison related to the venom of snakes, though many times more virulent. But beyond that, except for the vague evidences of punctured armor and flesh, there was nothing tangible to work on in an effort to solve the mystery of Paxtonia. From these sketchy hints little could be concluded except that some weapon, unseen because of its smallness, was involved, that it was under intelligent control, and that the purpose of that intelligence was hostile.

THE TWO MEN looked at each other. Both were aware that they were prisoners aboard their own ship, for to venture out of the war turret was to court instant death. For a time, protected by the thick and terrifically stout turret armor as they were, they were safe; but they felt sure that not to make active use of that time would be fatal. The Paxtonian menace had doubtless spent days digging surreptitiously through the hull of the ship, and progress would be slower against the turret shell. Nevertheless, once a small, and not easily discoverable hole had been driven through it, subtle invisibility could be relied upon to defeat, in the end, whatever protection proton pistols might provide.

Rolf and Kerny could not safely reach the radio room at the rear of the conning tower to send out an S O S call, even if to do so would accomplish any good. It would be pointless to signal a puny freight or passenger craft, and even a war rocket would be almost helpless. Now that the invisible foe was much more on the alert than it had been

at the time of the Montridge expedition's arrival, dozens of men from a war rocket might be killed in trying to effect a rescue.

"Well?" said Dr. Rolf at last. The tone of the word was enough to show that, for the moment at least, he was in doubt as to what might be done.

Al Kerny had an opportunity now to explain the scheme of which he had thought. He glanced at the chest resting beside MacDowd's body, and then back at Rolf.

The big pilot spoke hesitantly, for he knew his limits where the higher brackets of science and mechanics were concerned.

"I believe you'll agree with me, Doc," he began, "that it's almost certain that what made those tiny wounds in MacDowd and the rest of the men were some kind of solid objects—poisoned projectiles so small that they're out of sight. The thing to do is to get down to their level of smallness, magnify them so we can fight them in their own size plane and thus spoil their advantage. That way we'll be able to tell what they are and what's running them!"

"Yes indeed!" Rolf commented sarcastically. "But how are we to 'get down to their level of smallness'? A microscope, you will say, is the answer, and perhaps an ultra-sensitive microphone. But have not both been tried without results? Did not Professor Montridge even probe the pin-prick wounds of the first victims, only to find nothing? We could never examine all the air in this ship with a microscope. Finding what we seek, that way, would be like finding one special grain of sand on a beach! Nor are our best microphones delicate enough to pick up whatever sounds the—the danger here might make!" Kurt Rolf's tone was bitter.

"You don't understand," said Al Kerny. "Wait!"

He stood the chest up on end and opened its front. Within was the intri-

cate switchboard of a radio-robot control. There was a radio-vision screen here, by means of which the operator could see what the mechanical eyes of the robot saw. And there was a diaphragm which would reproduce in amplified form the sounds heard by its mechanical ears. More intricate were the keyboard controls, the visible portion of which resembled the keyboard of a typewriter. By manipulating properly the banked rows of keys here, one transmitted radio impulses into the ether, which, when received by the robot, were translated into the desired action of its various limbs and parts.

From a small box inside the chest—carefully lined with felt, like a jewel casket—Al Kerny took a minute mechanism. He held it in his glove palm. The mechanism looked like a beetle made of metal. Its length was only about a quarter of an inch; but it had legs like a living beetle. It was provided with a tiny rocket, and a gravity screen, like a space ship. Moreover, it possessed a pair of appendages meant for grasping and handling. These were fitted with metal fingers finer than human hair.

THE DEVICE was a micro-robot, or, if the trade name was to be used, a Scarab. The task of constructing such a tiny and incredibly intricate fabrication was a matter involving infinite skill, patience and precision. The most powerful microscopes had to be used, and the most delicate of tools. The nervous waver of a finger, during the process, was enough to ruin much of the fragile workmanship that had so far been completed.

However, in spite of all the difficulties of their manufacture, Scarabs, or micro-robots, had proved very useful since their invention. First, because they could go almost anywhere and spy on almost any activity; they had been employed in detective work. But their

utility had since broadened into other fields. Mechanics inspected the not easily accessible interiors of great engines with them, and they were of value in scores of other ways. No expedition to a strange place would have felt itself adequately equipped, unless it possessed a micro-robot.

Al Kerny held the tiny miracle where Dr. Kurt Rolf could see it. "Maybe I'm crazy, Doc," he said hesitantly. "But I'm a kind of optimist."

"I do not grasp at all what you mean," Rolf stated in puzzlement. "We have used the Scarab to explore the deep crevices of Paxtonia. Professor Montridge worked its controls on the first day, before he was killed. Then there were others—Ted Rose, Boris Andriev—both dead now—and myself. We learned nothing of what it is that makes Paxtonia dangerous. The Scarab, small though it is, is not small enough to deal with the unknown."

"Agreed," Kerny admitted. "But look! You're smart that way. You know all about these micro-robots. If you could make another one, the size of a grain of sand, it should be able to see just what the menace is!"

Rolf gave a start of sheer consternation. For once his intellectual face looked almost stupid. It was seconds before he could manage to speak.

"Splendid," he croaked feebly. "That is, if it was possible. How could you expect me—any one—to build a Scarab no bigger than a sand grain? Are you—?"

"Insane?" Kerny questioned with a mild grin. "Well, I suggested that I might be. But you haven't got all of my idea yet, Doc. I don't mean that you should construct this ultra-micro-robot with your own fingers, of course—at least not directly. I mean that you should manipulate the robot control, making our Scarab do the work. In the television screen you would see the magnified images of what its eyes saw.

As far as vision and handling goes, the whole size scale would be raised; so that the job would be almost like working with stuff of the usual dimensions."

Again Rolf registered extreme surprise, as the boldness of the idea struck home. But when he spoke once more, his voice was calm. Inspiration had been given to him; and now, in his methodical way, he was testing it mentally, to discover whether or not it was sound and practical.

"Substance," he mused. "You would think that the parts of a machine so very small would break under the strain of their mere operation. But no, that is not true. The strength of material, in proportion to size, increases as size is diminished. This scientific fact is easy to demonstrate: Under Earthly gravitational conditions, a lump of soft putty a foot in diameter will flatten with its own weight if set on a solid surface; while a lump of the same putty, if only an inch in diameter, will not flatten."

ROLF was silent for a moment. Then fierce eagerness gripped him. "It is a magnificent thought, Al Kerny!" he shouted. "We will make use of it! Or, anyway, we will try to make use of it! Under more favorable circumstances I could really do it justice, by working—how should I say?—in steps downward. With the Scarab as big as a beetle, I could make a Scarab as big as a sand-grain. This second Scarab could build a miniature of itself, as big as a dust grain. The third Scarab could construct a fourth, bearing the same proportions as the first to the second, or the second to the third. And so on, down, to the limit imposed by the ultimate indivisibility of the atoms themselves!

"The only difficulty would be in maintaining radio control of the smaller Scarabs—the waves they would emit and respond to would be so very fine and faint! But I think this obstacle could be surmounted in steps—upward

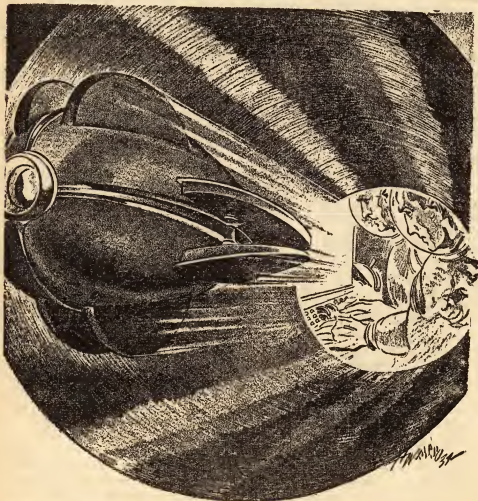


and down! A large radio transmitter would send its signals to a small receiver, to which was attached a transmitter of the same size scale. This second transmitter would contact a still smaller receiver. And so the relaying process would continue, using finer and finer impulses all the time. Upward the process would work just as well, a small transmitter contacting a larger, though sufficiently sensitive, receiver. The radios, which are part of each Scarab, in both diminishing and increasing order of size, would complete the

chain. Thus I might be able to explore a truly miniature environment, in which the most minute microbes would appear as colossal monsters!"

"Hold on!" Kerny advised, to check the scientist's hurtling thoughts, and to keep them within the bounds of practical necessity. "Most likely the building of one Scarab of sand-grain dimensions will be a tough enough job for now."

Rolf's expression sobered. "Yes," he mumbled in realization. "A tough job. There is great need for hurry, and so



*It was startling to think of craft of such smallness as being possible—*

much to do, and so much care to be exercised! Almost everything must be made from scratch, so to speak—even many of the tools for our present Scarab. Then it must devise wires almost as fine as the cilia of a microbe, and tiny electromagnets and photo-electric cells, and lens of microscopic size, not to mention scores of other things as intricate! But from the complete set of spare parts, available in the supply compartment of the chest here for the repair of any breakdown of our present Scarab, we can at least draw the necessary substances: steel foil and floss, copper, sodium, tantalum, tungsten, quartz, and so forth. And we have the little atomic repair furnace to supply heat."

"Then your job starts now, Doc," said Kerny. "I'm sorry I can't help you much."

His words were mild and apologetic. But his feelings were loaded with stark, burning lust for vengeance against the nameless horror that had murdered his friends.

Kurt Rolf nodded grimly and took the Scarab from Kerny's hand, replacing it, for the moment, in its felt-lined box.

The two men removed their cumbersome space suits, which they had worn as a now evidently futile guard against the danger of the menace. They could breathe here in the sealed turret, since all rooms aboard space craft have individual air purifiers. One never knows what chamber may need to serve as a refuge for the survivors of an accident of the void. Likewise, each room is provided with bottled water and a supply of concentrated rations.

Rolf inspected the Scarab, started its minute atomic motor. Kerny disposed of MacDowd's body by locking it in the torpedo compartment, which adjoined, and formed a unit with, the turret. Next he collected the materials and articles necessary for the coming task, and placed them on a portion of

the floor which his companion indicated. In the midst of this outlay the scientist set his tiny, mechanical proxy.

Then he crouched down before the robot control and began to manipulate its keyboard. The Scarab went to work.

PAXTONIA, the jagged, baneful fragment of an ancient and mighty world, tumbled around on its axis. Night and day succeeded each other, each built of tense, dragging hours. A race was in progress, a race between Rolf, constructing an ultra-micro-robot, and whatever it was, that, if given time, must surely find its way into the turret room, with fatal results to its human occupants and failure on their part to solve Paxtonia's ghastly riddle.

One night, Kerny, peering sternward from the turret windows, noticed a new and weird manifestation of that riddle: several glowing, phosphorescent dots on the visible curve of the space ship's hull. Those dots marked the positions of tiny, deepening holes in the metal. The unknown was drilling fresh passages into the craft, as doubtless it was puncturing bulkheads within, and working, out of sight somewhere, on the surface of the turret itself. But Kerny was still unable to act against the mystery which smallness concealed. He could not bring his proton pistol to bear against the luminous dots, through the massive walls of the turret; and he dared not venture forth yet, not only because of the danger of his own life, but because, during his exit, death might enter the refuge, destroying his and Rolf's last chance of penetrating the enigma which threatened all commerce in this region of space. He could only shake his big fists, curse vengefully, and help Rolf whenever he was able.

On the turret floor, during the endless hours, a metal beetle toiled busily, plying tools which were almost too small to see with the unaided eye—tools many of which it had fabricated itself from

bits of steel floss and foil, and minute flakes of hard diamond, with the aid of the little atomic furnace that sputtered beside it.

And in the television screen of the robot control, the operations were enlarged, until those tools seemed to be of a size which men would use for fine work. The turret room itself had the aspect of a tremendous, cliff-walled cavern.

Rolf alone was qualified to handle the robot control during most of the job; but while he slept, KERNY guided the little Scarab, polishing new parts, winding coils, and doing other less intricate, though necessary, things.

GRADUALLY, the Scarab of super-smallness was taking form. Viewed directly, it was only a glinting speck, like a little shred of steel among a mass of filings; but examined in the television screen, it was a minute though intricate thing, somewhat like the mechanism that was building it, though, because of the need for haste, it had been simplified.

It had no arms or legs, but it was provided with gravity screens, a rocket-propulsion unit and deflector-fins to guide it in its flight. It had eyes and a minute microphone which could pick up sounds finer and more faint than any a larger device could detect. Within its flattened, oval form were its radio receiver and transmitter, and the instruments necessary to interpret properly the commanding impulses that came to it through the medium of the ether.

At last the new Scarab was completed and made ready for action. But would it work as it should? And would it be effective in combating the Paxtonian mystery? Or had the two men who were responsible for its creation been following a false lead in their theory that in microscopic things lay the only means of approach to the grim problems they were trying to solve?

Dr. Kurt Rolf adjusted his robot

control to receive and transmit the delicate radio impulses on which the effective guidance of the ultra-micro-robot depended. He did not need to use the radio of the larger Scarab as a relay, for the new robot, in spite of its extreme smallness, was still not so tiny as to be beyond the direct range of the control.

Next, he and KERNY put on their space suits once more; for presently, if all went as they had planned, there would be no air around them. Now Rolf proceeded to manipulate the keys of the guiding apparatus, just as he had done while directing the movements of the larger Scarab.

Ejecting a minute thread of white flame from its rocket, the little metal miracle leaped from the floor and circled the walls of the turret.

In the television screen, what seemed a great, murky void was visible. In it even the dust motes of the air seemed as huge and jagged as masses of broken stone.

"You've done it, Doc!" Al KERNY said in tired though mighty enthusiasm. "Now maybe we'll be able to fight!" His face was haggard with the strain of tension; it looked almost brutal.

"Perhaps," was Rolf's weary, laconic response. "It is best that we do not open the door to give our super Scarab exit. It would be safer to make a hole in the door."

KERNY turned the focusing boss of his proton pistol until the flame it would throw was reduced to a concentrated stream of energy no thicker than a pencil. This he directed at the door from close range. Under the hammering of myriad, focused protons, the metal melted swiftly. In a minute there was a hole, the caliber of the beam, through the portal. With an expiring whisper, audible even through oxygen helmets, the atmosphere in the turret rushed from the opening; for in the passage without, and in the conning tower beyond, all the air had long since

escaped, leaking through the punctures made, by the hidden enemy, in the ship's hull.

Now Kerny broadened and decreased the force of the flame; but he still kept it directed at the hole to form a sure guard against the entrance of the baneful unknown. Only for a moment was Kerny's pistol inactive. That was when Rolf guided the super Scarab through the boring that had been made for it. Now, out of sight, it was flying close to that surface of the door which faced the passage.

THE rapt attention of both men was now on the television screen. In it, through the eyes of their tiny servant, they could see the tremendous expanse of the door, and the colossal void of the passage leading to the conning tower. The great rocks that were dust motes, sucked from the war turret along with the air, were settling rapidly, for the atmosphere that had supported them had been much thinned by expansion, and now it was being thinned further by leakage through the punctured hull. Soon it would be gone entirely: No sound could be picked up by the super Scarab's microphone or transmitted by the diaphragm of the robot control; for the air was already too thin to carry vibrations.

But with the swift disappearance of the dust motes, vision improved. There was nothing strange in the vicinity of the door, but in the vast, clear distance of the passage, close to the gigantic globe of a ceiling illuminator, was a swirling swarm of specks which did not settle! Paxtonia was beginning to give up its grim secret!

Rolf sent the super Scarab hurtling cautiously nearer to the swarm. Details sharpened, as, with fascinated attention, the men watched. In the screen they saw scores of black spheres, smaller than the vanished dust particles. But they looked like space ships! Space ships

employing a principle of flight different from that known to Earthmen!

It was still startling to think of craft of such smallness as being possible. But both Kerny and Rolf knew that there was no scientific fact to deny either the possibility of the existence of such craft, or the existence of their still more minute makers.

And if they were space ships, many riddles were easy to explain. Smallness imposes no limit on speed, at least in a vacuum, while in air, if given time to accelerate, and if powered by motive devices of a strength in proportion to that of the vessel sent out from Earth, the attainment, by these hypothetical space craft, of a velocity surpassing that of a bullet, should not be difficult. Such speed would enable these ships to hurl themselves right through the metal of a man's vacuum armor and into his flesh beneath. This idea is, at first, rather hard to believe; but the strength of materials, in proportion to size, increases as size is diminished. A small object can be dropped from an enormous height without injury, while a large object of similar construction and materials, would be, under the same conditions, completely smashed. The same rules apply to living creatures.

Perhaps, then, MacDowd and the others had been killed by tiny space ships which had penetrated their armor and flesh, injecting into the latter a microscopic but effective portion of virulent poison. If this was the case, doubtless the craft had retreated back through flesh and armor in the way they had come, leaving no trace of themselves for man's microscopes to discover.

Perhaps the glowing specks which Rolf and Kerny had seen on the flanks of their own vessel were only the visible manifestations of microscopic heat tools, mounted on invisibly tiny space craft, and being applied to burn through metal. The explosions of the commer-

cial ships from Earth, when they had approached Paxtonia, could be explained by the penetration of some of these super Lilliputian space vessels into their interiors, and the application of a tiny spark to the sensitive, old-type fuel in their fuel tanks. Yes, with a tangible basis for a theory, answers to several questions were not difficult to find now.

RUMINATIONS of this sort must have flashed through the minds of both Kerny and Rolf. But their most intense thoughts necessarily concerned the practical considerations of the immediate present. The time had come to clash with the enemy!

"They have retreated from the door!" Rolf shouted into his ether phone. "You can open it now, if you act quickly! A foot to the right of the first illuminator globe in the corridor is where the swarm of spheres is amassed!"

Kerny jerked the portal open, and directed his proton pistol with swift and vengeful accuracy. Blue, deadly flame shot from the weapon, blanketing the space which Dr. Rolf had indicated.

Al Kerny saw no evidence that his act had produced any effect; but he heard the scientist's triumphant shout: "Success! Small things may be tough, but the spheres can't withstand the blast of swift and ultimately small protons! The heat, generated in their substance, has melted them! Now I shall look for more swarms of spheres, and tell you where to find them! We must clear the corridor and get back to the conning tower!"

For several seconds there was a pause, while Kerny watched the super Scarab waver and circle ahead of him. Tiny though it was, its position was always plain because of the spark of incandescence ejected from its rocket.

Presently, Rolf shouted again: "Above the Scarab—perhaps eighteen inches! Blast quickly before there is time to attack and destroy our robot!"

Al obeyed, and another group of tiny, deadly spheres was wiped out.

So it went. The scientist gave directions through his ether phone, and Kerny responded with wolfish and gleeful efficiency. There was still grave danger; but Kerny was not blind and helpless any more, when faced by the menace in miniature. He and his companion possessed a little guide that could meet that menace on an even basis.

Thus, at last, the corridor was cleared, and Al moved on to the conning tower. Here, death must have passed him by only the narrowest of margins; for one of the hordes of spheres, swirling to attain what was probably meant to be a death-inflicting velocity, passed within a yard of him before he could destroy it. But presently, for the moment at least, the conning tower was clear of enemies.

"Make a dash for it now, Doc!" Kerny shouted into his ether phone.

Momentarily, the super Scarab came to rest among banked levers and instruments, while Rolf, bearing the robot control, reached the conning tower as quickly as he could. Once inside, he slammed the metal door behind him. Then he set the robot control down on the floor, and began again to hammer its keys.

The super Scarab took off once more, to parallel the walls in its flight, seeking the tiny holes which the enemy had drilled in the ship's hull. There were several of these here in the conning tower. Kerny welded all but one of them shut with his proton pistol.

This remaining hole, viewed in the television screen, looked like a big tunnel. Now, under Rolf's guidance, the super Scarab darted through it, and out over the Paxtonian plain. Ahead of it, revealed in the screen, were several retreating spheres.

"We will follow them with our ship," Rolf announced. "We must keep close to our robot, or else the distance will

be too great for contact with it. The radio waves it emits are very faint."

Pilot Al Kerny leaped to the ship's controls. Levers moved in his grasp. There was a heavy vibration of rockets as the craft cleared the ground.

THE TINY FLAME of the Scarab was difficult to see in the bright sunshine; but Kerny, peering through the windows, managed to locate it. After that he kept his gaze fixed on it with grim purpose.

Over the wreckage of vast machines and buildings, the ship flew. Bas-reliefs of slender, attenuated bodies with great bulging eyes, carved on crumbling walls, glided by beneath.

"Proceed," Rolf assured his companion. "We are on the right track. The super Scarab is still behind the retreating spheres."

Al Kerny saw the speck of flame that was his guide dart down toward what was apparently an immense boulder. Then it disappeared, seeming to vanish into the mass of the huge lump of stone. Automatically, not knowing what else to do, Kerny worked the helm levers, causing the ship to begin the arc of a circle above the great rock.

He looked back toward Rolf, crouching beside the robot control. But in the television screen, action was depicted which caught and held Kerny's gaze as though it possessed hypnotic power. So like was the aspect of everything to the parts of an environment which a man would consider of normal dimensions, that it took Kerny a moment to realize that what he beheld was the magnification of minute miniatures.

The micro-robot from which the view was broadcast, was traversing what appeared to be a wide tunnel, illumined dimly. Before Rolf's creation, the spheres were retreating more slowly now; and from the floor of the passage queer, rodlike weapons, mounted like cannons, were being discharged against

the intruder with faint white spurts of flame. But strangest of all, these weapons were manned by slender gray monsters, identical in every detail to the monsters depicted in bas-relief on the walls of the ancient Paxtonian domes!

The firing from the rod weapons was feeble and scattered; so Rolf guided the super Scarab on along the tunnel. But presently its way was barred by an air lock of some transparent material. The spheres, retreating ahead, had passed through the lock, but now its doors were closed. Nevertheless, through its clear substance, a cavern was visible beyond it—a cavern illumined by what must have been artificial sunshine. There were lakes and forests and hills and growing crops on the cavern floor; and there was what seemed a great, crystal city, in which millions of monsters, like those of the bas-reliefs, were swarming.

Now the ground batteries in the tunnel began a more active barrage. Rolf was forced to cause the micro-robot to retreat. Presently it emerged above the barren landscape of Paxtonia.

THE SCIENTIST was pounding control keys less furiously now. "I think I understand it all at last," he said. "The spheres are really space ships, manned by Paxtonians as small, almost, as microbes. They were the cause of all our troubles."

"But they are miniatures of the ancients, who were countless times their size!" Kerny burst out. "Why should that be?"

Rolf shrugged. "Simple," he breathed. "Simple and marvelous. It is a solution to the problem of shortages, which probably has seldom been thought of. When the world of which Paxtonia was a part broke up, ages ago, a number of its inhabitants survived here. They built the stone domes, in which water and air could be sealed. But existence was—how shall I say?—very



cramped. There could be no expansion of population because of the limited supplies of air and water that had been salvaged from the wreckage of the broken world. Race extinction was doubtless in sight. But it so happens that a small organism needs less air and water than a large organism. In consequence, the Paxtonians decided to grow smaller.

"In a limited way we understand the means they must have used. Growth, in man, is controlled to some extent by gland secretions. Heredity also has its part to play in determining an individual's size. By a process of selecting only the smallest individuals of the race for parenthood, the Paxtonians might have reached their present minuteness after long ages of time. But doubtless they found a quicker way with the aid of gland control.

"Utilizing much the same methods, they reduced animals and plants in proportion. And now they are a people which must number many millions of individuals, living complex, civilized, and comfortable lives inside the sealed caverns which they have excavated in a great rock. No wonder their refuge wasn't found before this!"

Al Kerny looked a trifle dazed. "Well," he said, "that ends the Paxtonian mystery, doesn't it? There's

nothing left to do but knock over that damned ant hill and wipe out every bug inside it! The torpedo projector in the war turret is made for that kind of work!"

Kerny glanced toward the door, his gray eyes glinting with the light of vengeance. Then, suddenly, most of the grimness of him softened.

"We know how to fight them now," he said irrelevantly. "They aren't dangerous any more, if we're careful." He paused, and then went on: "They were probably scared; that's why they blew up those commercial ships and killed the boys. In their position, we'd have done the same, if we had the nerve. Besides, they've already paid the price in blood. Maybe, when they find out that Earthmen aren't such bad eggs, they'll make friends. Earth ought to be able to learn a lot from them. Say, Doc, let's just scam and leave the little devils alone! There probably are a few of their spheres still somewhere on the ship; but with the super Scarab to watch, we'll be fairly safe."

Rolf smiled. "I was almost sure you would have a change of heart, my friend," he said. "And yes, here comes the Scarab, back."

Through the tiny hole in the wall of the conning tower flew a pin prick of hot, white light—



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*A Scientific  
Article:*

# RA, THE INSCRUTABLE

by R. DeWitt Miller



That thousands might not die—  
If the handful of radium represented in this picture were removed from the world, thousands of people would die from those types of cancer that are curable by Ra. The substance actually shown in this picture is ordinary sugar, which closely resembles radium in appearance. If this handful were actually radium it would be worth \$20,000,000. There are two such handfuls of radium in the world to-day.

SCIENCE has never been the same since Ra, the inscrutable, was discovered. That enigmatic pair of letters has enlarged science's conception of the universe more than anything for the last two centuries.

It began by destroying half the moss-grown laws of physics. Then it quietly pushed the accepted idea of the foundation of matter into the file labeled "Exploded Theories." From inanimate matter it turned to living tissue and attacked the world's most dreaded disease. At the present time it is threatening to revamp science's conception of the basis of life.

Ra—the strangest thing on earth, destroyer and builder, dealer of death and giver of life—Ra—symbol for radium.\*

For centuries science laughed at the dreams of ancient alchemists, toiling in their dim medieval laboratories in search of a method by which cheaper elements

could be transmuted into gold. Elements, according to the science of the nineteenth century, were final, unchangeable things. The scientists had reduced matter to a neat little theory. They felt securely happy that they had a definite, unchangeable basis for the mother of the sciences, physics.

They are far less sure to-day. The dead, changeless matter in which they once believed has faded like a child's dream. No theory of matter will ever again be so simple—because of the discovery of radium and radioactivity.

After less than fifty years of research, radium and radioactive substances are threatening to turn biology upside down. The new marvels of the wonder elements come so fast we forget the more fundamental changes of scientific conceptions which followed their discovery.

If you saw a nugget of gold slowly and inexorably change to silver, you would probably call in the society for psychical research. But exactly the same principle is involved in the death and birth of elements going on in a milligram

\* Although radium is only one of the radioactive elements, it has come to stand for the whole group. "Radioactive" is a name coined by Madame Curie. It is the general term for the elements whose eccentricities are discussed in this article.



This is not a gauntlet from the days when knighthood was in flower, but a lead shield used to protect the operator when handling bare capsules of radium. The long tweezers, which can be seen protruding from the gauntlet, prevent the operator's coming too close to the radium. The capsule of radium is lying in the lead shield shown in the lower right-hand corner of the picture.

of radium—and nothing on God's green earth can alter that process or change its speed by a fraction of a second.

The heat of the electric furnace, the absolute cold of outer space, nor any known chemical or ray, can prevent radium from becoming lead. Science cannot start the chain of radioactivity. It cannot stop it.

After years of research, science is beginning to realize how fundamental was the revolution wrought by the discovery of that pinch of white powder, looking like a few crystals of ordinary sugar.

Recently, Eddington, famous British physicist, called the electron a "whirl in space." Surely but steadily, matter is taking on more and more of the attributes once ascribed to force. But fifty

years ago the universe was believed to be constructed of stable, changeless atoms, like a child's tower built of indestructible blocks.

According to the older conception, the universe was a thing finished and changeless. Nothing would ever be added to the sum total of matter, nothing taken away. There were certain kinds of building materials called atoms. There was so much copper, so much iron, so much hydrogen. The relative amounts of these elements never changed. An atom of copper would remain an atom of copper through all time.

It was a closed system. More than that, it was a dead system. The most fundamental of the sciences, physics, was fretting away the years inside a prison whose walls were made of a theory too small for the universe.

The discovery of radium blasted the original breach in that wall. After a few brief years, the wall itself is gone, and science is striding forward, in all directions, toward retreating horizons.

A few years ago Millikan startled the world with his discovery of cosmic rays, and his theory that they betokened the birth of matter. That the theory has been called in question is an inconsequential point—that it was advanced at all shows the change in the conception of matter caused by radium.

But radium did not stop with the unseating of physics. It quietly advanced on biology. After it proved that science needed a more living conception of matter, it began to tighten the relationship between radioactivity and life. At the present time there are rumblings from a dozen branches of science, rumblings which may some day shake the scientific world as no other storm has ever done. But before this pending commotion can be made clear, a few more fundamental facts need repeating.

The basis of reality is matter. The basis of matter was thought up until 1896 to be the atom. In that year the

discovery of X rays suggested the possibility that there might be a smaller unit of matter than the atom.

However, the physicists and mathematicians remained secure in their old basic unit until Antoine Henri Becquerel left some uranium salts lying in the dark near a photographic plate. The plate was mysteriously fogged. Through blind chance, Ra had left its signature. After that the physicists began to be suspicious that there was an Ethiopian in the atomic cordwood.

At about the same time, Madame Curie discovered something of greater importance. Uranium is extracted from the mineral pitchblende. By testing pitchblende with an electroscope, she found that the radiations emitted by the ore were several times greater than those emitted by uranium itself. Of this discovery she wrote:

I then made the hypothesis that pitchblende contains, in small quantity, a substance much more strongly active than uranium itself. This substance would not be one of the known elements, be-

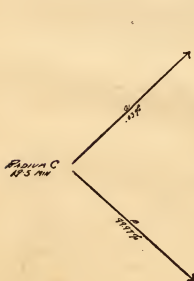
cause these had already been examined; it must, therefore, be a new element. I had a passionate desire to verify this hypothesis as rapidly as possible—

With a patience unsurpassed in the whole history of science, she and her husband extracted a few milligrams of the new element from a ton of pitchblende. They gave the new element a name—radium.

Then came the most fundamental discovery of all. They found that radium and uranium were not like other elements. They were not static. They were not changeless. Radium was born in the disintegration of uranium. In its turn it died in the formation of radon—and in the death struggle of its atoms, subatomic rays were emitted.

An atomic bomb had destroyed half of physics.

Silently and steadily, any given amount of uranium becomes a new element, ionium. The change is fundamental and final. It is not a chemical change or the formation of a new com-



The radium C, one of the products of the disintegration of radium into radon and polonium, breaks up into two subatomic products as is shown here. This point well illustrates the extreme complexity of the subatomic change going on in radioactive elements.

RADIIUM C' —————> END  
14 MIN

RADIIUM C' —————> RADIIUM D —> END  
14 5 SEC

National Primary Standard of Radioactivity

(NaCl, Radium Chloride, 15.375 mg)

Secondary Standards

10 mg

25 mg

50 mg

pound, as when iron rusts. One of the basic building blocks of matter changes to another, and man is powerless to do anything about it.

But the uranium-ionium step is only the first link in the chain. Ionium is as perverse as its mother. It changes to radium. Radium, in its turn, becomes a gas, radon. Radon becomes polonium, and polonium changes to common, ordinary lead. Radium is at present selling for \$55,000 a gram. A lead sinker for a fishing line, weighing many grams, costs practically nothing.

As to where uranium gets its radioactivity, science is noncommittal. It is like asking where matter comes from. Why one family of elements should be endowed with a strange, almost lifelike quality, is a question which—like most of the questions concerning radioactivity—leads only to a psychological wall made up of symbols and man's inability to take the abstract in pure doses.

It is certain, however, that when each element in the chain changes to the next, a definite drop in atomic weight occurs. Every instant a certain number of the atoms of a radioactive substance explode. This violent subatomic disturbance results in the expulsion of certain particles and the rearrangement of the atom in the form of a new element.

The particles blown out of an atom of radioactive substance when it changes to a new element form the radiations characteristic of that step in the chain. Rays—or radiations—are simply streams of these particles. The word "particle" is used here in the same sense

that it is used by physicists—as a symbol for something that isn't quite understood. The structure of the atom may be roughly compared to that of our solar system, with the nucleus of the atom being represented by our sun. If you can then imagine a planet or moon being suddenly shot out of the system, you have some idea of what happens when a radioactive atom breaks down. Only don't use that illustration if there are any physicists in hearing distance. They like to take their explanation straight—in symbols, equations, and formulæ.

If you like to leave the calculations to the mathematicians and have a look at subatomic force, examine the numbers of a luminous watch with a good reading glass. Allow a few minutes for your eyes to become accustomed to the dim light.

The letters will be seen to be seething with innumerable sparks. These sparks are caused by the particles thrown off by exploding radium atoms striking against the atoms of zinc sulphate with which the minute quantity of radium is mixed. Each spark indicates an atomic explosion.

Eventually, the figures on the watch will lose their luminosity. This is caused by the breakdown of the zinc sulphate under the electronic bombardment. The radium does not fail. It takes 1700 years for a given quantity of radium to lose half its power.

Coming back to the pattern of atomic breakdown in the radioactive elements, we immediately get into deep water again. The whole process is infinitely complex. For instance the step between radon and polonium is made up of a series of minor changes designated as radium A, B, C, D, E, F, and G.

To add a final complication, two entirely distinct series of radio disintegration have been discovered—one starting from the element thorium, and another from actinium. Where thorium and ac-

tinium get their radioactivity is as much of a mystery as in the case of uranium.

The whole thing is sufficiently mixed up to keep the physicist busy for quite a while. In fact, the matter would have been permanently turned over to theoretical science if it were not for a queer fact concerning the particles shot off during the process of atomic change.

These particles will pass through the finest armor steel that will stop sixteen-inch shells. In fact, radium radiations are now used to check internal flaws in castings for all U. S. battleships. But the most important thing about these gamma rays is their strange effect on living tissue. People who handled radium in the early days, before adequate protection by lead shields, died of mysterious burns.

So, around the beginning of this century, medicine began to experiment with the latest toy of the physicists. Inevitably the new weapon was turned on the old subtle destroyer of human life—cancer. Suddenly new hope was born for the thousands who had been doomed to horrible deaths. Ra had opened a second great line of research.

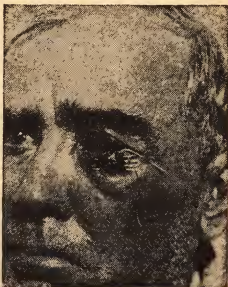
The first discoveries about radioactivity were made in the quiet security of the mathematician's study, and the comparative safety of the physicist's laboratory. But the second engagement with Ra was a life-and-death struggle. Many new names were added to martyrs of medicine before the doctors learned to keep their distance from the radiations thrown off by the exploding atoms.

But the warriors in white whose bodies were burned and withered by the mysterious eternal fire did not fail in vain. Within a few years lead containers, shields, and lead-impregnated aprons had made treatment by radium safe both to the doctor and the patient.

Those early workers in silent death found that, although long exposure to the rays altered or killed all living tissue, normal body cells could stand small

doses of radiation. But the cells of certain types of cancer—particularly those of the skin and similar tissue—were not as resistant to radiation. They shriveled and died before the surrounding tissue was affected.

Radium alone has not beaten cancer, but many tumors, once thought hopeless, have been completely destroyed by the streams of subatomic particles thrown



A skin cancer near the eye being treated by the use of radium needles. These needles have been inserted, under an anæsthetic, into the heart of the cancerous mass. Radium is particularly effective in treating this type of skin cancer.

off by the atomic breakdown of the wonder element.

As the years have gone by, larger and larger doses of radiation have been used successfully. To-day "radium bombs" containing as much as five grams of the precious element have been placed within the bodies or on the skin of cancer sufferers and left for hours.

Atomic bombs are not yet a reality in warfare of man against man, but they are already in use in the struggle of man



against cancer. Strangest of all, patients who have had within their bodies the ultimate force—subatomic power—feel no pain. In fact, some patients seem to feel a strange exhilaration. One woman in whose body four grams of radium had been placed overnight, refused to sleep. "I didn't want to lose a moment of that strange feeling of joy and exhilaration," she explained.

Another strange effect of radium on living tissue is the ability of its radiations to cause artificial changes or "mutations" in germ cells. In the normal process of evolution a certain number of abnormal individuals appear in each generation of plants and animals. Radium radiations—as do the X rays—increase the frequency and amount of



Electroscope used in the Bureau of Standards in Washington for determining the power of the rays of any given quantity of radium. All radium used or offered for sale in the United States is checked by this device.

these variations. Up to the present time no method has been devised to control these artificial mutations so as to produce desired changes in plant and animal forms. Should such a method ever be discovered, radium would add eugenics to the sciences it has revolutionized.

At the present time, however, science is endeavoring to take advantage of the chance that some of these artificial mutations caused by the radiation will be an improvement on the normal form of the

organism. This line of research is especially promising in the creating of new forms of fruits—particularly of the citrus family.

These fruits are propagated by budding rather than from seed. In this way the artificial changes could be maintained without danger of their reverting to the original form. In the citrus experimental station, at Riverside, California, the seeds of normal oranges are being exposed to radiation in the hopes that a more juicy and stable variety of navel orange may be produced. The present navel was originally an accidental mutation. But science cannot wait for nature to produce another such mutation in perhaps a thousand years. So radium has been called upon to speed up the process.

This line of research may have far larger results than creating a better orange for your breakfast table. If radium in the hands of man can produce new types of organisms, so can radium in the hands of nature. It would be only natural to expect that organisms living in parts of the world which are rich in radium and other radioactive substances would suffer more mutations than those living on parts of the earth's surface where radioactivity is small.

Following out this line of thought, Dr. R. R. Spencer, of the U. S. Public Health Service, made a number of illuminating experiments.

He observed many generations of fruit flies which he kept in a San Francisco street-car tunnel. The rocks through which the tunnel was bored were known to be rich in radium. The percentage of abnormal flies in each generation was much greater than in the flies bred outside of the tunnel.

Dr. Spencer then took his flies to Colorado and bred them in the shaft of a radium mine. There were even more mutations in the generations of these flies than there had been in the street-car-tunnel colony.

For his next experiment he used bacteria—a needle containing radium was dipped in a culture of bacteria. After a few minutes the bacteria were placed in a new medium and allowed to multiply.

When the exposure to the rays was prolonged, all of the bacteria were killed, but when the exposure was short, most of the organisms survived. When these were allowed to multiply, new forms appeared. Every effort was made to prevent possible contamination by bacteria carried in the air or on the instruments. Still the new forms continued to develop in the radium-treated bacteria. More than that, the changed bacteria did not revert to type, but kept their changed form through succeeding generations.

From this data, Dr. Spencer formulated a new theory of the origin of the great pandemics of disease which have periodically ravaged mankind. Science has never been able to explain why such diseases as bubonic plague, scarlet fever, and influenza should suddenly burst forth with such fury that they threaten to destroy the human species.

These diseases are always present on the earth. From whence comes their new vitality? From radium, suggests Dr. Spencer. History indicates that the majority of these pandemics have swept down from China and India. This has generally been attributed to the poor sanitation in these countries.

But these countries have another thing in common besides bad plumbing. They both border on the great plateau of the Himalayas. These are the youngest mountains geologically, which would indicate that they contain large amounts of radium. Furthermore, the Russian scientist, Dr. V. I. Vernadsky, made a radium survey of Russia and discovered that the percentage of radioactivity increased as he approached the Asiatic highlands.

It is also noted that most new forms

of plants are discovered in high mountains, where the radium deposits are greater. The ocean floor is another spot for the development of new organic forms. Specimens from the floors of many parts of the oceans have shown a high percentage of radium.

From all these facts Dr. Spencer forms the theory that there are spots on the earth, possibly some hidden valleys deep in the Himalayas, where disease germs are subjected to radiations and where new forms are developed.

These new forms, although similar to the original, differ enough to permit them to escape the immunity which men have built up to the normal type. When such germs chance to be brought into the highly populated areas, an epidemic breaks forth, which then assumes world-wide proportions, as in the influenza pandemic which took more lives than the World War.

It is conceivable that some day, not so far in the future, an enlightened mankind will forbid human beings entering these areas of heavy radioactive deposits, thus cutting off the source of new disease forms.

While this theory awaits further experimental data, another discovery, announced in April of this year, has added a fact of tremendous significance to long chains of startling discoveries based on radioactivity.

A German scientist by the name of Zwaardemaker removed all of the element potassium from the blood stream of animals. The hearts of the animals then ceased to beat. Potassium is a very slightly radioactive element.

Zwaardemaker had an idea. He substituted another radioactive element for potassium in the blood stream. The hearts again began to beat. He went a step further and merely subjected the hearts to bombardment by radium rays. They began beating at once, showing that it was not the lack of potassium

which stopped them, but the lack of radioactivity in the blood stream.

More and more researches are indicating some subtle connection between life and radioactivity. The purely chemical conception of life has not borne much fruit. Science to-day is turning its attention more to electricity as the key to the strangest phenomenon in the universe—living matter. But even electricity seems somehow to fall just short of the extra-chemical force necessary to explain life.

Radioactivity is closely allied to electricity. Could the key to the mystery of life be hidden in those strange exploding atoms of radioactive substances? Living matter is composed of atoms. But the atoms of living matter seem imbued with a strange force—a force as strange as radioactivity.

Idle speculation, you say. Perhaps. But do not forget what Julian Huxley said: "If you don't go beyond fact, you'll never get as far as fact."

That sentence could never be better applied than to radium. If the early skeptics of radioactivity had possessed the spirit of Huxley, fewer men would have had to eat their words. No discovery in a hundred years has so completely fulfilled every hope as has the discovery of radium and radioactivity.

It has revamped basic science as no other discovery has ever done. It has opened the door to the understanding of the structure of the atom. It has given

medicine a new weapon against the world's most terrible disease. It has opened new lines of research into living matter and heredity. It has shown the force within the atom—the only force by which rockets can be driven outside the gravity of the earth.

Without the discovery of radium and radioactivity the theories of Einstein, Jeans, Eddington and a dozen others would never have been born. No one would ever have dreamed of such a thing as a particle of matter having velocity but no mass.

But why review the past? The greatest conquests of radioactivity are still in the future.

Ra, the inscrutable, stands at the edge of the unknown, beckoning science onward—to an ever larger and truer conception of the universe.

Chart showing the atomic change of the radioactive elements. Three series of radioactive change are shown: one starting from uranium, one from thorium, and one from actinium. For simplicity a few of the minor steps in the chain have been omitted. Science has always been somewhat baffled as to the classification of radioactive elements. The general tendency is to classify only the major steps in the chain, such as uranium, ionium, radon, radium, etc., as elements. The life of many of the radioactive products, particularly the minor ones, is very short, often a matter of minutes or seconds, as is shown in this chart. In all cases the 2 rays are far more penetrating than the A or B rays and it is these rays which have the all-important effect on living tissue.

ELEMENT	ATOMIC WT.	ATOMIC NO.	T	RAYS
<i>Uranium-Radium series</i>				
Uranium I	238.18	92	4.5x10 <sup>9</sup> yr.	A
Uranium II	234	92	about 2x10 <sup>6</sup> yr.	A
Ionium	230	90	about 9x10 <sup>4</sup> yr.	A
Radium	226	88	1580 yr.	A
Radon (Ra Emanation)	222	86	3.82 days	A
Radium A	218	84	3.05 min.	A
Radium B	214	82	26.8 min.	B, 2
Radium C	214	83	19.7 min.	A, B, 2
Radium D	210	82	16 yr.	B, 2
Radium E	210	83	5.0 days	B, 2
Radium F (Polonium)	210	84	136.5 days	A
Radium G (end-product uranium-lead)	206	82		

ELEMENT <i>Thorium series</i>	ATOMIC WT.	ATOMIC NO.	T	RAYS
Thorium	232.1	90	$2.2 \times 10^{10}$ yr.	A
Mesothorium	228	88	6.7 yr.	B, 2
Radiothorium	228	90	1.90 yr.	A
Thorium A	216	84	0.14 sec.	A
Thorium B	212	82	10.6 hr.	A
Thorium C	212	83	60 min.	
Thorium D (end-product thorium-lead)	208	82		

ELEMENT <i>Actinium series</i>	ATOMIC WT.	ATOMIC NO.	T	RAYS
Protoactinium	230	91	about $10^4$ yr.	A
Actinium	226	89	20 yr.	B
Radioactinium	226	90	19 days	A
Actinium A	214	84	.002 sec.	A
Actinium B	210	82	36 min.	B, 2
Actinium C	210	83	2.16 min.	A
Actinium D (end-product actinium-lead)	206	82		

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# PENAL WORLD

by Thornton Ayre

**J**AMES CARDEW, former American citizen, was on Jupiter through no fault of his own. He was in no way to blame for the fact that he now stood inside his enormously reinforced space suit gazing out on a landscape incredibly vast and rugged, stretching to a colossal distance, bounded at remoteness by the boiling horror of the seven-thousand-mile-wide Great Red Spot.

Jupiter was the penal world of the system, last working place of the criminals of Earth, Mars and Venus. And for a very good reason! Once a space machine landed on Jupiter it was common knowledge that, in the case of the huge convict machines at least, it could never leave. The titanic gravity of the planet claimed large-sized ships absolutely.

James Cardew had been framed by certain jealous officials of the space ways—shipped to Jupiter because he knew too much of graft and corruption in high places. For two years he had worked among the bitter-hearted men at the settlement—a vast underground abode of *itanium* metal, Periodic No. 187, vastly heavy, and the only known metal capable of withstanding, for six continuous months, the unbelievable pressure of Jupiter's atmosphere and down-drag. By the time the six months were up this highly radioactive metal began to collapse—

The convicts' entire life, therefore, consisted of building up the very walls that hemmed them in. And twenty miles away, where the walls were likewise always being repaired by good-behavior men, was the underground residence of Governor Mason and his

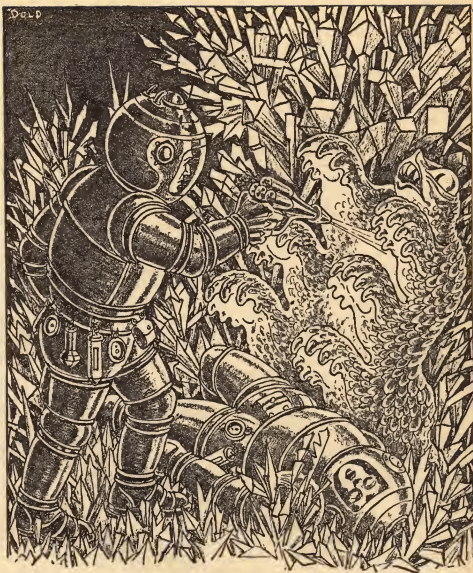
family, voluntarily marooned on this colossal world.

Despite the fact that within the governor's abode and the settlement there were machines which nullified the crushing gravitation, men did go berserk at times—warders and prisoners alike. Some went to the exterior—a freely permitted act—quite unprotected, to die instantly in an atmosphere of pure ammoniated hydrogen at a frigid temperature of a hundred and twenty degrees below zero centigrade.

Others were smarter. They frisked *itanium* space suits and furtively escaped in them—but they were never heard of again. Either way it was suicide.

James Cardew had done pretty much the same thing. Suicide had been in his mind for months; he'd been on the verge of walking unprotected to the exterior. Then, from the external reflectors in the main machine room, he had seen a space ship of the private variety—small and easy to handle—fall like a brilliant comet in the dense atmosphere, dropping finally about two hundred miles due east. If he could reach that ship he might, by very reason of its smallness, break the effect of Jupiter's drag and get back to Earth, square his wrongful conviction.

It was pretty obvious that the vessel had been accidentally caught in the giant world's enormous attractive field; maybe the pilot had been an amateur, unauthorized by the space flying committees. Whatever it was, James Cardew realized that he had to reach that ship within three weeks before the violent atmosphere and pressure made an end of it.



*A vicious stream of devastating flame spouted from the oxygen pistol—  
sent the "sican" rearing upward—*

Three weeks—two hundred miles across Jupiter's terrible terrain. To escape the prison had not been difficult. It was now that the difficulties began.

CARDEW'S gray eyes were grim behind the six-inch, unbreakable glass of his helmet; his lean, powerful face was

set in grimly determined lines, the lines of a man accustomed, by now, to bearing inexorable strain. For every step he took he was forced to raise a weight about three times in excess of normal, including his densely heavy space suit, so designed as to exclude external and maintain internal pressures.



Even so, being a one-hundred-and-sixty-eight-pound man, he weighed four hundred and forty-eight pounds on Jupiter, with his space suit and heavy equipment added to it. It made of his body a vastly heavy, aching machine.

He took stock of his position from behind the protection of two upjutting rocks of tremendously dense material. They afforded him a little shelter from the *tycane*—technical name for the vast two-hundred-and-fifty-mile-per-hour wind forever raging from pole to pole of the giant world. Yet by reason of the enormous gravity the effect of the wind on a human being was about equal to a gale of one hundred miles per hour. Around the Great Red Spot, the one remaining portion of Jupiter still un-solidified, despite the frigid cold of the rest of the surface, the *tycane* had been known to reach the incredible velocity of over four hundred miles per hour—but then the Spot was recognized by all experts as the fester spot of Jove, seven thousand miles of bubbling, densely heavy materials—

Cardew, moving his arms with enormous effort, studied his compass inside its protective *itanium* case and took stock of his direction. His route would lead him to the Fishnet Jungle, through a cleft of the Seven Peak Mountains, and after that along the shores of the Turquoise Ocean. The points were fairly familiar in his mind, but the jungle was the main thing that worried him—how he was going to pick his way through its weird mass.

Finally he pushed his compass back in place on his back and swiftly checked over his heavily shielded equipment—first-aid pack, down to a common container of smelling salts, tabloid provisions, and an oxygen-jet pistol, the only practicable weapon of destruction in an atmosphere containing vast preponderances of hydrogen and ammonia. Not much equipment, but enough in a world

where every scrap of weight added to an already crushing burden.

Cardew braced himself and emerged from his protection into the full blast of the eternal wind. Since dawn had arrived about an hour ago, he had about eight clear hours in which to make further progress; with a bit of luck he might reach the Fishnet Jungle in that time. That it was already quite visible to him in the weak daylight filtering through the writhing clouds signified nothing. There were always the *tycane* and the constant down-drag to be reckoned with. He moved with labored effort, the strain bathing him in perspiration inside his hot, heavy suit.

To the rear, now far distant, gleamed the sunken dome of the penal settlement, and farther away still the governor's habitation. To left and right there was naught but hard red ground. Once it had all been like the Red Spot; now it had cooled to produce an effect as dreary as anything that could be imagined.

Only the Fishnet Jungle, with its blunted trees and weird tracery branches—from which the fanciful name was derived—provided any relief in the otherwise crushed monotony. Even the highest summit of the distant Seven Peak Mountains only reached a thousand feet in height, held down by the mighty gravitation.

Cardew struggled on, forcing his weight-anguished body into the teeth of the *tycane*. He found it hard to believe that the wind outside his helmet was absolute poison, that the trees of the distant jungle were basically ammonium carbonate, living in a temperature of a hundred and twenty degrees below centigrade zero. . . .

Mad, idiotic world! It was populated, too, by creatures as mad as their environment. Cardew had heard of them—mighty strong things with a fairly high scientific intelligence—known as the *joherc*, derived from Jovian Hercules. Where they abided, however, was

something of a mystery, since they were rarely seen on the surface.

**GRUNTING WITH EFFORT,** Cardew went on slowly, slipping and sliding on ground of enormous hardness, one wary eye fixed on the distant, quivering upspoutings of molten matter from the Great Red Spot. No telling when it might decide to erupt. It had a nasty habit now and again of covering thousands of square miles of Jupiter with molten chemicals. That, in a landscape normally bitterly cold, produced effects almost too cataclysmic for imagination—certainly death for a lone traveler.

Occasionally the fitful gleams of sunlight through the dense scurrying clouds made the scene even more desolate, painted it with weak, washy colors, like some redstone plane of Earth at twilight. Gloom, depression and barrenness—mighty Jove had all these attributes.

Cardew stopped only once, to nourish himself, on his journey toward the jungle. He moved a switch on his helmet and a spring, releasing itself, dropped into his open mouth a vitamin pellet, following it with a rejuvenating drink-essence tablet. Neither of them were more than quarter of a centimeter in size, but so potent in effect that he felt renewed strength surge into his aching limbs.

He rose up again from the rock against which he had been lounging and staggered on—onward all through the drab afternoon, battling the eternal wind, muttering threats, in good American, upon Jupiter and all it contained.

As he had calculated, he reached the outskirts of the Fishnet at dusk. The twilight was brief, dimmed from murky drabness into night, relieved only slightly by the clouded glow of the attendant moons.

With lackluster eyes he peered into the shadows beneath the Fishnet trees. In every direction about their boles sprouted the weird below-zero forms of

Jovian plants, bearing not the vaguest relation to Earthly vegetation, but patterned in some incomprehensible surrealist style, full of bars, cubes, oblongs and angles, more crystal than vegetational in form. Flowers there were none. Jovian vegetation, in the main, reproduced itself by fission and lived in the slow, creeping style of the unicell. There was something almost disgusting about the way the growths occasionally popped noisily and became two, growing with extreme slowness thereafter toward maturity and further reproduction. Cardew heard them bisect quite distinctly through his sensitive external helmet detector as he plodded onward—

Until he gained a Fishnet tree with branches lower than the rest— To scramble into them, though they were only six feet from the ground, demanded enormous effort—took thirty minutes of muscle-wrenching strain. But once he was in their firmly spread, bedlike mass he relaxed with a sigh, satisfied that he was safe from the weird ammoniacal crawlers.

Beyond a wish that he could get out of his space suit and have a real breath of honest fresh air, he had no regrets. So far, so good. His eyes closed with leaden weariness; the tree branch moved up and down in the grip of the *tycane* slowly, ceaselessly—

As he half dozed, the detector phones brought in a medley of vaguely familiar noises above the wind's whine, chief amongst which were the weird, half-human twitterings of the *ostriloath*—strange birdlike creature crossed vaguely between ostrich and sloth—and the deep bass grunting of the feather-sphere, the porcupine of Jove, rolling everywhere at terrific speed like a heavily flaked cannon ball. Familiar sounds all—

THEN, suddenly, Cardew jolted violently upright, wide awake, his heart slamming painfully with the sudden in-

tensity of his effort, his ears still ringing with what had definitely been a human shout of fear!

"Damned delusions!" he breathed quickly, staring round and below at the crazy jungle. "Couldn't have been——"

He frowned in bewilderment. A scream from inside a helmet would be carried to the amplifier on the helmet exterior; even the slightest cry from anybody would be instantly enormously amplified by the dense atmosphere. But nobody else could be in such a cockeyed spot, surely——

Cardew broke off in his quick reflections and stared with amazed eyes through the clear patch between the nearest Fishnet trees. The light of Europa shone down through cloud breaks upon a space-suited figure lying flat on the ground, struggling against the gravity to tug out an oxygen pistol. A little distance away a hideous little-headed *sican*, violently strong, sheathed in an armor plating of frozen scales, fixed his intended prey with enormous glassy eyes. It was the largest of all Jovian animals, measuring five feet in length and nearly the same in width. Then it began to advance slowly on its six immensely powerful legs.

Almost as quickly as the danger registered in Cardew's mind, he had dropped violently to the ground and tugged out his own oxygen pistol. With ponderously dragging feet, the ghastly pull of a nightmare's dragging chains, he tried to run forward—fired his gun as he went.

Immediately a vicious stream of devastating flame spouted through the moonlight, momentarily lighted the mad glade with bluish-yellow fire. The force of the jet struck the *sican* clean in the center of its body, sent it rearing upward in a sudden paroxysm of searing pain.

Maddened, it twirled round and jumped dangerously near the sprawling, motionless figure. Then, at another vi-

cious cut across its hideous face, it twisted round and traveled at high speed on its enormously strong legs into the jungle fastness.

Cardew felt the sweat of relief suddenly start to pour down his face. He replaced his gun and clumped slowly forward against the raging wind, turned over the prostrate figure with considerable effort. Jerking out his torch, he flashed the beam through the dense face glass, then started back in astonishment at beholding the perspiration-dewed face of a girl, eyes closed, hair raven-dark, lips pale with unconsciousness.

"Where in Heaven's name did you drop from?" he said in bewilderment. Then he turned industriously to his first-aid kit and set to work with her helmet trappings. Swiftly he uncapped the triple valve socket connected to her respirator, screwed the heavy metal tube to the top of his smelling-salt container.

IMMEDIATELY the powerful aromatic ammonia fumes surged into her helmet, set her lips moving with sudden revulsion, forced her clear, dark eyes to open in sudden alarm.

"Better?" Cardew whispered into her external receiver, as he recapped her respirator and laid the salts container beside him.

She nodded weakly. "Yes—I think so. I—I don't know where you've come from, but it certainly was opportune." She spoke rather shakily in a voice that was pleasantly mellow. "I thought I was going to make a perfect target for the *sican*!"

"Not with my oxygen pistol in good order." He smiled. Then, locking his arms round her metal-clad waist he heaved her to her feet. Her face was clearly relieved and grateful in Europa's murky light.

"I guess that was good of you," she said warmly. "You risked your life. Probably you're thinking I'm an awful

fool to pass out like that? Suppose we call it plain fright?"

He ignored her apologies. "American?" he questioned eagerly.

She nodded. "By inheritance, yes—but born on this ghastly planet through no fault of my own. I'm Claire Mason, daughter of Hubert Mason, the settlement governor."

He stared at her in amazement; her gaze, too, was one of polite inquiry.

"I've heard of you, of course." He hesitated. "Like the rest of the people on this ghastly world, you're its prisoner. But that doesn't explain what you're doing here all the same."

She laughed shortly. "That's easy! If you'd been born here because your father and mother's social position demanded that they give up all thought of Earthly life and devote their lives to this planet, what would you do on seeing a private, small-sized space machine fall two hundred miles to the east? You'd head for it, of course! Well, that's what I'm doing. I reckon about three weeks before pressure wipes it out. Naturally, there are no small ships at the settlement—only the useless, heavy prison machines, and they're about crushed to powder."

She paused and regarded him rather naively. "I know you can't be Dr. Livingstone," she said demurely. "But just the same, I suppose you have a name?"

"I did have a number," he growled; then, more sociably, "James Cardew's my name—escaped prisoner trying to get back to Earth to prove my innocence. I'm heading the same way as you are."

"Really?" Her voice seemed a little cool. She seemed to sense there was something not quite right about hobnobbing with an escaped prisoner.

"I suppose, since the governor's place is twenty miles from the settlement, you took a wider route to this jungle?" he asked.

"Obviously," she said calmly. Then, tossing aside her uncertain manner, she went on earnestly, "I want to see the world I belong to, feel natural instead of artificial gravity, breathe fresh air, see fields and great cities—New York in particular. It must be wonderful!"

"Not bad," he admitted reflectively.

"To get back to Earth—or, rather, to visit it for the first time—I'm prepared to risk Jupiter drag in the space ship. That is, if it's still space-worthy."

"It'll probably mean death," he said.

But she only shrugged inside her huge suit. "Supposing it does? Better than Jupiter. In fact, I——"

She stopped short and gave a little cry, made a clumsy movement backward into Cardew's protecting right arm.

"What—what is it?" she gasped in alarm, pointing. "Look!"

He tugged out his gun again. "Take it easy," he murmured. "A *joherc*, or I miss my guess!"

THEY STOOD motionless, watching the fantastic creature that had suddenly appeared in the clearing, plainly visible in the now combined lights of unclouded Europa and Ganymede. It moved cautiously, with a certain oddly childlike nervousness quite incongruous for such a tremendously powerful body.

"A *joherc*, all right," Cardew affirmed. "Heard of 'em many a time, and heard their description, but never saw one. They're pretty good scientists in their way—maybe a bit dangerous, though."

Still they watched as the *joherc* came into complete view—a biped, only two feet tall, with two legs nearly as thick as a man's body and almost fantastically muscled. Further support was provided by the broad, kangaroolike tail on which it sat ever and again. Its remaining anatomy was made up of a pear-shaped body, stumpy arms, enormous pectoral muscles and chest—in

which, according to description and reconstruction at the settlement bureau, there beat three powerful hearts to create a normal circulation in the eternal drag. On the mighty shoulders was the strange, triple-jointed neck, semi-human face with wide, half-grinning mouth and scaly head.

A pure product of ammonia, living in a climate ideally suited to it—a living, thinking creature of superhuman strength and swiftness, mentally active, yet humanly childlike in manner—a veritable cosmic paradox.

The two remained motionless as the creature advanced. His broad nostrils were quivering oddly, scenting something. The deeply-set, many-layered eyes stared penetratingly round the coldly lighted clearing—then suddenly espied Cardew's smelling-salt container! That was enough! The *joherc* dived like a flash of gray and seized the container in a powerful hand, picking out the already half-pressure-crushed crystals with the blunt fingers of the other, tossing them into his huge mouth.

Cardew came to life at that and let out a yell. "Hey, you! That belongs to my kit! Get out of it! Get going!"

He flung himself forward strainedly and snatched up the container with a gloved hand, slammed the cap back on top of it. The *joherc* sat on its broad tail, licking its lips complacently. Obviously, with its usual phenomenal sense of smell, it had detected the crystals from a distance. Such a treasure trove, though sheer poison to an Earthling, was evidently too much to resist.

"On your way, *joherc*!" Cardew snapped, returning the container to the hook on his belt. "No crystals going free!"

The *joherc* made no move, but his keen eyes followed Cardew's every move as he returned to the relieved girl, replacing his pistol in its holster.

"Obviously not hostile," was her comment.

He grinned behind his face glass. "Not while I have these crystals, anyhow." He chuckled. "Try to imagine a guy wandering around with a bag of priceless gems, not caring much whether he had them or not. If you were naturally decent, would you be hostile? No, sir! You'd just stick around on the chance of getting some——"

He stopped and looked about him. "What do we do?" he asked. "Stop for the night or carry on?"

She surveyed the jungle's menacing depths. "Might as well carry on, since every moment counts. We've got to find our way through this tangle somehow and reach the Seven Peaks. Let's be going."

"Suits me!" He fell into clumsy step beside her as they began their laborious struggle forward into the Europa- and Ganymede-lighted madness of the Jovian forest——

And behind them, sniffing the ammoniated breeze, shooting against the enormous gravity with the ease of an Earthly kangaroo, came the *joherc*, odd face almost like that of an anxious child, as its unmoving gaze watched the bobbing smelling-salt container on Cardew's waist belt——

THE FOREST became sparser as the two progressed, but its life teemed as furiously as of yore. Here and there a deadly lance-stem, fastest growing thing in the wilderness, stabbed outward with an unbearably cold, daggerlike frond, able at close quarters to penetrate the thick armor of the space suits.

Somehow the two avoided the horrors, only to find themselves constantly dodging whizzing feather-spheres and jabbering *ostriloaths*. Ever and again they found themselves hurled to the ground as the cannon-ball hardness and speed of the feather-spheres knocked their legs from under them. Nor were

their feelings improved at finding the *johere* not far behind in the moonlight.

"I wish you'd go away, Jo!" Cardew snorted in discomfiture, and his voice boomed through his microphone on the creature's tiny ears. "Go play tag with the cannon balls! In plain words, scram!"

Jo sat on his tail and waited, cast a thoughtful pair of eyes toward the now

vaguely dawn-lighted sky.

"No go," Cardew growled to the girl, shrugging. "I guess he'll follow until we reach the space ship."

They struggled on again. Then, in the increasing light, they suddenly saw ahead that lance-stems and Fishnets were smashing and splintering violently under the force of enormous feet. Exactly as they had expected, a huge speci-



*Fatigued though they were, the two followed him toward that ammoniated shore.*



men of the *sican* genus came blundering into view.

Cardew's fingers tensed on his oxygen pistol; but long before he could take aim, something shot past him in a blur of motion, stumpy arms and hands flung wide, blocklike legs tensing into bulgings of muscle at each terrific spring.

"Jo!" the girl cried in amazement. "Of all the foolhardy things——"

"Don't be too sure!" Cardew interrupted her tensely. "These Jovian blighters, especially the bipeds, have got strength beyond imagination. Look!"

He pointed quickly. The *joherc* had already seized the powerful *sican* by the throat, was crushing, with every scrap of his enormous, concentrated, tight-packed strength, into that leathery neck, performing his actions at such a terrific rate it was hardly possible to follow him. Working against a gravity two and a half times more powerful than Earth's, his actions correspondingly increased in like ratio.

He was obviously lighter than his antagonist, and by far the more intelligent. The *sican* finally retreated, thin, aqueous humor freezing solid on its thick neck as fast as it appeared.

"Bet the air smells even more pungent than usual outside," Claire said reflectively as she watched the brute retreat in the now full daylight. "Imagine bursting a bladder of pure ammonia in an atmosphere already thick with it!"

"I can imagine!" Cardew murmured. Then he turned quickly as Jo came springing back, grinning hugely. "Nice going, Jo!" he exclaimed in gratitude, swinging round his smelling-salt container. "Here are some crystals for services rendered!"

THE Jovian's powerful tail sent him thumping to Cardew's side. The greedy, scaled fingers scooped out a dozen of the crystals before the pressure had a chance to crush them, transferring them

to his wide mouth with astonishing avidity.

"Ammonia, so you say," he said suddenly in a hoarse voice—and the two stared at him blankly. "Your poison. Good to me. Block salt extra good. Cliffs of it—way there!" He swung his blocky arm vaguely.

"That covers a lot of territory," Claire murmured.

"Yeah, about two hundred and sixty-five thousand miles of it," Cardew agreed dryly. Then he looked at the Jovian in puzzlement. "So you talk, eh?"

"Read mind," Jo explained briefly. "Not very clear—only damn smatterings. Not sure of position of words but meaning get. Read minds easily."

"You're ammonia, aren't you? Formed by pressure and below zero temperature?"

"For years numbering hundreds," Jo agreed affably. "Eat white salt. Water, you call it. Peroxides, too. Plenty of those. And crystals—like I saved your life for. You got them."

"Hm-m-m," Cardew murmured, frowning. "Strikes me as queer to find a fellow like you hopping about on a mad world like this, and yet you can read thoughts. High mental development, eh?"

"Very high," Jo agreed modestly. "I am clever. I have oriental, too. No, not oriental—orientation!"

"What's that?" Claire asked in puzzlement.

"Sort—sort of homing instinct common in pigeons," Cardew explained. "And you've got it, Jo?"

"You're right I have! And I smell, too!"

Cardew grinned. "You're telling us! But I suppose you mean you have a strong sense of smell? Well, thanks for the help, anyway. We've got to be getting along."

"You can't do without my clever ideas," Jo remarked flatly. "I'm coming like hell with you."

Cardew winced as he caught sight of the girl coolly smiling at him.

"Seems to be reading your language quite well, doesn't he?" she asked sweetly.

He looked anxiously. "Just what I'm afraid of! If he happens on the language I used at the settlement, he'll set the atmosphere on fire."

He caught her by the arm, and they pushed on again, followed constantly by the tireless Jo, occasionally directing their path. He stopped only now and again to break off pieces of unclassifiable crystallized bark and jam it in his mouth. Then, with that same look of asinine foolishness on his face, he sprang on behind them.

By another nightfall they had cleared the jungle—but away to the west, under the lowering sky, there beat scarlet tremblings and pulsings.

"Guess we ought to rest, but I don't like risking it with that going on," Cardew muttered wearily.

"The Great Red Spot, eh?" Claire mused.

"Correct. And from the look of things, it's in a state of eruption. It may mean a thousand-mile flood of destruction. Coming our way, too! Eh, Jo?"

THE JOHERC fixed his odd eyes on the disturbance. "Better step on hurry," he suggested anxiously. "Give yourselves gas, I imagine. The way is straight; I know it."

"What way?" Cardew demanded irritably. "For Heaven's sake, pick your words straight, Jo! Can we rest, or is the danger too great?"

"I'll say!" Jo responded surprisingly. "Straight is the way to Seven Peaks, and then to Turquoise Sea and oxygen block cliffs—out to space ship. That's where you head?"

"Sure, but how did you know?" Cardew shrugged wearily. "Oh, I'd forgotten your thought reading for the mo-

ment. If you know the way, why didn't you say so in the first place?"

Jo didn't answer the question. Instead, he said slyly, "Way guided for crystals only. Like hell I want them now. Step on it!"

Cardew grimaced and handed him some more from the container.

"There you are. Now lead on."

Jo needed no second bidding. He leaped forward with astounding energy, leading the way across the barren red plain in the direction of the main giant cleft in the Seven Peak range. Wary, unutterably leaden, the two jogged after him. Then, suddenly, Claire, exhausted beyond measure, could stand it no longer. She sank weakly to the ground. "It's no good; I can't make it!" she panted, her face pale and strained in the Europa light.

Cardew braced himself against the screaming wind and looked down at her in perplexity. Certainly he could not carry her; his own weight was severe enough. He glanced anxiously to the rear and beheld visible streams of redness crawling through the night—searing overflows from the erupting Spot. Once through the cleft there would be safety, but here—To wait until dawn meant certain death.

"Only another few miles, Claire!" he implored desperately. "We've got to make it! It's the difference between life and death—"

She did not answer—only lay flat and relaxed.

Then Jo descended from the gloom. "No dice?" he questioned anxiously. "Claire lie down?"

"It's the damned gravity," Cardew growled. "We're not used to it."

Jo did not respond. Without a moment's hesitation he bent down and hauled the girl, space suit and all, onto his broad left shoulder; then, before Cardew could grasp the situation, he was treated likewise on the other shoulder. The next thing he knew he was

flying through the air with dizzying speed, heart and lungs strained to the uttermost by the upward pulls against the gravity.

"Trifles mere!" Jo tossed out enthusiastically, vaulting mightily with legs and tail. "I have clever brain and big legs. Strength in large size. Get you safe, or else——"

Cardew couldn't reply; he was too strained for that. But the apparent marvel of Jo's activity soon vanished from his mind. The odd creature, gifted by Nature with a complex brain in which there ran a decided streak of generosity, was deliberately risking his own life to save two people of another world—unless it was for love of the smelling salts. The extraordinary nature of his giant strength became more and more evident as time passed. He seemed to regard the weight on his shoulders with no more concern than a man would trouble over a couple of canaries.

And he kept it up, mixing American slang with observations of considerable scientific significance ever and again—until at last the mountain cleft was reached and all possible danger from the overflowing Red Spot was far behind.

AHEAD, in the light of the moons, lay the amazing Turquoise Ocean, greeny blue in the pale light—enormous in extent, pure ammonia, its heavy, turgid waves thundering ear-splittingly on a beach that was red rock, backed to the rear with crawling cliffs of white, frozen oxygen.

Here Jo stopped and dropped his burdens rather violently on the shore. Like a gray streak, he headed toward the cliffs and began tearing at their frozen hardness, until, at last, he wrested free a jagged, splintering square.

By the time Cardew and the girl had sat up, he was eating the stuff hungrily. When at last he finished, he came forward rather sheepishly.

"The eats," he explained.

Cardew nodded as he and Claire allowed tabloids to drop into their own mouths. "Not surprised, old man. Guess I'd never get used to your diet any more than you'd get used to mine. Incidentally, how much further shall we have to go after staying the night?"

"No further. Space ship right here."

"Here!" Cardew looked round in puzzlement. He only saw the bleak desolation of that ammoniated shore. "Think again, Jo!" he said. "I reckon we've another hundred and fifty miles to cover at least."

"Get wise to yourself!" Jo suggested calmly. Then he motioned, with his thick arm, toward the cliffs.

Fatigued though they were, the two got to their feet and followed him, stopping finally before the argent masses. Jo pointed to the red ground and grinned gleefully.

Cardew started and the girl gave a little cry as they beheld a mighty circle of metal, apparently similar to *itanium*, sunken into the redness—a colossal manhole cover.

"We live below," Jo explained calmly. "Rarely come up except for special reason. Two reasons this time. We have many instruments. They showed us space ship fall and two people leaving prison settlement. I was told to get the lot—you and space ship."

CARDEW felt something clutch at his heart. "You—you damned traitorous little horror!" he burst out. "You mean you've kept up with us all this time so you could turn us into your rotten underworld? Why, you——"

"Keep on shirt!" Jo interrupted quickly. "No captives. I could easily lose you. Our leader wants you, sure—but I don't. Prefer to help. Very clever and generous; that's me."

"You mean you'll let us go?" Claire asked anxiously.

"You betcha!"

"But how can we—without a space

ship?" Cardew yelled. "You say you were told to capture it——"

"I did; it's down below—but only in the first gallery. I can get it. Now you know how came I on the surface to meet you. Obeying orders."

"That's clear enough." Cardew nodded tensely. "But about the ship. You say it's below. Did you drive it here?"

"I can do anything. I carried it."

"Carried it?" Cardew's voice was faint with amazement.

"Sure. Damned easy! I'll show you."

The two stood aside and watched, in bewilderment, as he locked his hand in the manhole's ring and pulled with all his power. By degrees the great valve rose upward under his enormous strength until it was vertical. Then he jumped down into a cavernous pit.

For nearly five minutes the two waited; then they both gasped in surprise as the familiar, blunted nose of a small private space flier began to appear. Little by little the whole ship began to emerge, thrust up the long pit incline by Jo's tremendous muscles. When at last it was on the flat ground he looked at them anxiously.

"Down below it was safe from pressure for much longer time than up," he explained. "Better go quick, scram. Very light to me—almost vacuum."

Cardew quickly looked the ship over. It was only dented from its earlier fall. He turned to Jo. "Did you manage to find out who it belonged to?"

"Sure. Two people like you—Pluto travelers. Caught in drag and crashed—necks broken. I read their brains before I threw them outside. Darned smart of me, and then some!"

Cardew looked at him gratefully. "You're a great scout, Jo," he said warmly. "I only wish I could repay

your generosity. Your orientation was right, by the way. How the devil you knew your way to these cliffs from the Fishnet is more than I can figure."

Jo's huge mouth grinned expansively. "Oriental sense first class," he agreed modestly. "You carbohydrates—me ammonia, but we think regular. Darned good race mine. Wish I could come with you, but your world would let my compressed body blow apart. No dice and deep regrets offered right now."

"There must be *something* we can do!" the girl insisted, turning toward the space ship's air lock.

"Perhaps—crystals?" Jo said almost shyly.

Laughing, Cardew unhooked the container from his belt and tossed it over. Then, with a final farewell, he and the girl passed inside the vessel and screwed up the air lock.

Once their stifling suits were removed, Cardew fired the rocket tubes. With a grinding roar, the ship tore furiously against the gravity; the terrific drag of Jupiter made itself evident instantly, a drag mounting with every second that the ship boomed and exploded upward from that titanic world.

In eight minutes both Claire and Cardew were unconscious, robot machinery alone firing the tubes. Then, little by little, as the distance increased and the gravity correspondingly lessened, they came out of insensibility, to find Jupiter a vast, banded disk behind them. Ahead was the void with the single green star of Earth plainly visible in the firmament.

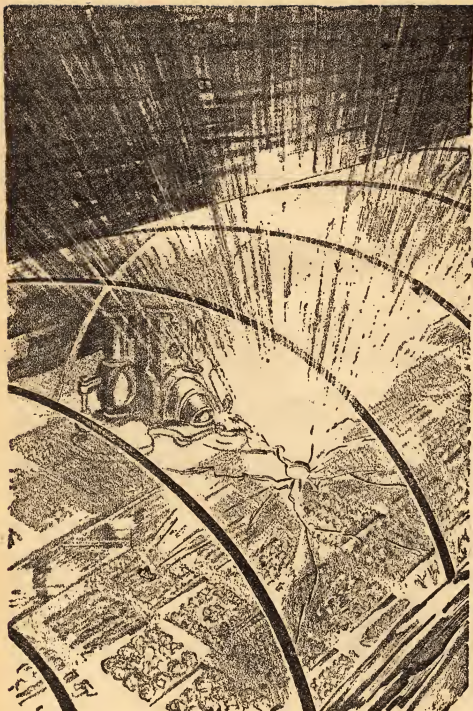
"We made it!" Cardew breathed thankfully. "We actually made it!"

"Thanks to Jo," the girl put in quietly. "I shall never see smelling salts again but what I'll think of him."

Cardew did not answer, but he was smiling.

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**NOTICE—This magazine contains new stories only. No reprints are used.**



*The domain of the folk from the Red Planet was swiftly being flooded with  
air that bore a deadly taint of poison—*



*A Novel*

# Stardust Gods

by Dow Elstar and Robert S. McCready

**N**O HUMAN EYES saw the Green Star fall. For an April blizzard was tearing over the mid-Western States. The night was a chaos of wind and snow and thick darkness.

No one in the little city of LaBelle noticed the dreamy roar and crackle of the visitor as it streaked down through the storm-tortured atmosphere. For a moment the sky was illumined by a green radiance.



But old Bill Stevens, who was the only person in that vicinity, was asleep in his shack. Had he been awake and sober, he might have called the phenomenon a flash of freak lightning. Or he might have thought that a power line somewhere had developed a "short."

The Green Star struck the ground in Fenton's woods. Pushed by the terrific puff of air radiating from the point of impact, a dozen trees crashed to the ground. Snow geysered up in a cloud of hot steam. Sod and earth splattered like jelly hit by a bullet.

Still, though the jolt of landing must have been transmitted for miles through solid rock and soil, it was masked by the howl and rattle of the storm. Thus the Green Star's arrival remained unheralded. It is unlikely, however, that even an immediate detection of that arrival could have produced any great difference of result.

Up to a point there was nothing truly novel about the visitor. Meteorites of large size, while rare, are not unknown. And the Green Star could best be described as a meteorite.

The visitor's shape was crudely that of a drop of water, distorted from its normal, spherical form by the action of gravity. Its large, anterior end was rounded; its smaller, posterior extremity was tapered to a point. But if this apparent attempt at streamlining was intentional and not merely the product of chance, there was little evidence to substantiate such a theory.

The Green Star was rough and jagged, like any meteorite. And like any freshly arrived chunk of refuse from the void, it must have been chilled through to the core, for the glare of incandescence emanated by its surface, which had been heated by atmospheric friction, was fading out very rapidly. The intense green light, indicating a temperature of thousands of degrees centigrade, dimmed almost to the point of invisibility in a matter of a few seconds.

IT WAS THEN, and only then, that the Green Star demonstrated its first definite signs of uniqueness. It was faintly phosphorescent, throwing off, even when cold, a dim, grayish-green luminescence. This glow was strong enough to reveal in silhouette the eccentric traceries of inert iron and nickel veining the more uniform gray slag of its composition.

This slag looked like plain graphite, except that it was luminous, as described. Under close inspection it would have revealed an intricate crystalline structure; its mass was rather large; and its spectrum, if examined, would have betrayed the presence of elements of great density, unknown to human science. But such knowledge would have given a man only the vaguest glimmerings of understanding.

In the slag, apparently akin to the lifeless rocks of the Earth, and as insensitive to both heat and cold as any inorganic material, processes went on which would have dimmed by comparison the thoughts of the keenest human brain. It pulsed with life of a different order than that of Earth; but there was nothing supernatural about its metabolism. It approached its problems as does a man, seeking, with logic and comprehension, to direct and control natural law to suit its desires. But because the senses and powers at its command were far removed from those familiar to human beings in many respects, its methods were utterly un-Earthly. In its researches it had never employed intricate artificial instruments; for it could "feel" the inmost texture and composition of matter and energy. In place of hands with which to accomplish its work, it possessed a natural command of etheric vibrations, magnetic forces, and corpuscular emanations, which it could create at will out of the subatomic processes that were the essence of its life.

The meteoric missile lay, for several

minutes, without change or motion, in the pit it had blasted in the ground. Then, with sharp, pinging, tinkling noises, minute crystals began to break away from the parent mass. The crystals flew in every direction. The process seemed outwardly quite similar to that of the chipping and scaling of fresh glaze from a jar that has just been removed from the kiln and has been subjected to a too-sudden cooling.

The strange activity increased in vigor. The Green Star was dissolving, and a phosphorescent halo, formed of crystals as fine as granules of sand, gathered in the snow-laden air around it. That the crystals did not fall and did not submit to the buffeting of the fierce wind was sufficient indication of the presence of some sort of intelligent application of energy.

At last nothing remained of the Green Star but a few scraps of iron and nickel, lying, useless and discarded, at the bottom of the pit. The transgalactic visitor had broken up, and now the myriad tiny fragments of it moved off in a ghostly swarm toward the undamaged portion of Fenton's woods.

Certainly their driving energy was subatomic in origin—coming from the controlled breaking down of atoms within the substance of each fragment. Perhaps it functioned through the simple reaction principle, expounded by Newton, and well-known in connection with rockets. Maybe the tiny spurts of phosphorescence from the sharp corners and edges of the crystals were blasts of electrons or protons or neutrons, discharged from disrupted atoms and providing a propulsive and sustaining thrust.

GLOWING WEIRDLY, the cloud of crystals wavered and streamed through the creaking treetops of Fenton's woods, like a vast swarm of fireflies. Each minute piece of the Green Star now doubtless constituted a sepa-

rate entity, though it was evident that the members of the horde were still working in close coöperation. Tinkling and muttering querulously, like a host of excited elves, they clustered now around a towering oak, as if the magnificence and oddity of this giant specimen of Earthly flora appealed to some outlandish curiosity engrained within them.

But the inspection, if inspection it was, was brief. The alien horde moved on across a pasture and a last year's cornfield, both unrecognizable now in the screaming holocaust of the blizzard.

Presently old Bill Stevens' tumble-down habitation, two miles from the place where the Green Star had fallen, was reached. The crystals crowded, like a will-o'-the-wisp, at one of the patched and darkened windows.

Within the shack, Bill's dachshund, aroused by the glow at the window, and by the soft, eerie sounds made by the invaders, gave a low whine of terror.

But Bill himself was left to dream his alcoholic dreams undisturbed.

Breasting wind and snow with little effort, the horde proceeded on its way, and was soon close above LaBelle. It was two thirty a. m. The streets were deserted.

Again there were what seemed interested if short inspections of this and that. There were several cars, smothered with snow, parked at the curbs, looking lonely and forlorn in the light of the street lamps. These were investigated briefly, as were the pumps of a filling station, the steeple of a church, and various other things.

The street lamps received special attention; for maybe in them the intruders found an obstacle to the achievement of their purpose, perhaps divining this by means of senses unknown to man.

At any rate, a prompt and sentient, if puzzling response resulted from the investigation of the Terrestrial illuminating devices. The horde swirled un-

erringly out to the edge of the little city. Here, along a drift-blocked highway, stood the tall poles which supported the power lines.

Now the phosphorescent crystals formed themselves into a rotating cone that spun with frightful speed, dragging air with it to produce what was, in effect, a miniature yet tremendously violent tornado. Screaming shrilly, the vortex moved forward, snapping the high-tension wires as easily as a flying buzz saw might have done.

THE stormy blur of radiance over LaBelle was replaced at once by masking gloom as the street lights winked out. With all electrical interference now disposed of, the scheme of the intruders could be put into effect without danger of miscarriage.

The minute crystals of the swarm had, since the disruption of the Green Star, increased a trifle in size, perhaps assimilating the gaseous substance of the atmosphere, rebuilding atoms of oxygen and nitrogen to form the heavier atoms of the elements required for their growth. Each crystal might thus have multiplied its mass and bulk indefinitely, perhaps repeating at last the peculiar reproductive division that had produced the horde.

Now the latter scattered and thinned, the countless units that composed it dispersing to take up regularly spaced positions over the entire city, as well as a large part of the surrounding countryside. They were like ranks of soldiery awaiting the command to attack.

At once their slumberous phosphorescence increased in intensity, becoming dazzling and hot. But heat and light were only coincident products of more significant phenomena. Almost all motion in the area guarded by the host of crystals came to an end. Falling snowflakes were halted in their fall. The wind in and around LaBelle was checked, as if the very atmosphere itself

was held rigid by a giant power. The few creatures in the guarded region, humans and animals alike, who were awake at that time, lost consciousness immediately, their hearts and pulses slowed almost to the point of death; and those who slept fell into a still deeper sleep. So subtle was the strange seizure that afterward no one could recall its approach.

The crystals continued to burn brighter and brighter, consuming a small portion of their atomic substance in a terrific and precisely calculated output of energy. Responding to the greenish glare, everything beneath the alien host took on a dully glowing fluorescence—a fluorescence which seemed to assume the shape of all objects and things it touched, as wet plaster assumes the shape of a mold.

Perhaps ten minutes went by, during which the fluorescence gradually waxed and brightened. Then, from LaBelle and its environs a mirage arose—a bizarre, frosty, glowing ghost of the little city and the neighboring, snow-clad country. Houses, streets, cars, fields, hills and trees were all perfectly reproduced in it, like parts of some vast, three-dimensional photograph. And though they were hidden within the buildings, it is to be assumed that the human beings and animals were similarly duplicated, complete to the last vital and essential detail. Even some pattern of the invisible atmosphere, and of the snowflakes held rigidly in it, was congealed in the tenuous reproduction, which had been taken from the almost moveless original.

RIGID and unchanging, the mirage was hoisted into the chaotic sky by the rising children of the Green Star, who still maintained their evenly spaced formation.

And beneath lay the real LaBelle and its surroundings, both unaltered, except that everything in them had lost per-

haps one billionth of its mass. One atom in a billion had been stolen to form a pattern from which new buildings, people, trees, and so forth, identical to the old, could be recreated by the infusion of the necessary matter. Nothing had been really harmed or injured by the weird miracle.

The crystal horde bore its booty upward, clear of the storm, clear of the atmosphere of Earth. The void was all around now, black and awesome, and eerie with star shine. There was no friction in the empty ether. The crystals spat emerald sparks as they began to accelerate with their thin though mighty load.

Fuzzy and faint ahead lay the galaxy in the girdle of the chained woman of the sky, the constellation Andromeda. That galaxy was unthinkable light years away. But the destination of the strange robber band was far beyond that misty mass of suns, lying in a universe outside the range of Earth's best telescopes. How long would it take to complete the journey, even at colossal speed? A million years—two million?

Perhaps this is a naïve question. What can time or distance mean to entities as ageless, almost, as stone kept in a vacuum, and to wisdom that is sifting out the last scattered secrets of all that is, or ever can be, and is approaching the ultimate goal of omniscience? The crystals needed only to burn up a portion of their substance to attain the required velocity; then they could coast on, inert and unchanging, except for the small output of energy needed to bind and keep intact the form of the mirage they were transporting.

There had been four Green Stars. One had visited each of the four planets of the solar system that supported life. From Venus, Mars, and Jupiter, as well as from Earth, tenuous ghosts of highly organized solids, liquids and gases were speeding, to keep a mighty tryst—

## II.

OLD BILL STEVENS was ordinarily not an easy individual to arouse, once he had gone to bed.

Schnitzel was likely to be tolerant of his master's idiosyncrasies; but now Schnitzel was worried. There was an ominous smell in the air that tingled unpleasantly in Schnitzel's sensitive nose. He knew by instinct that in that odor there was a threat of death. Moreover, the light, streaming in through the dirty windowpanes, was wrong; it was too red and dull. Also, Schnitzel had memories of certain weird, nocturnal events that had rendered him almost dumb with fright.

Schnitzel arose from his position at the foot of the bed and scrambled awkwardly forward on his short legs, to cuddle his long, brown body warningly against old Bill's side.

This produced no satisfactory effect; so Schnitzel opened his mouth and voiced a protracted canine howl that sounded like murder in a Punch-and-Judy show. As soon as he could recover his breath, Schnitzel repeated the mournful and laughable ululation.

Old Bill Stevens cursed and mumbled thickly. Then he turned over in an effort to find a more comfortable position in which to continue his snooze, and tried to draw the ragged quilts over his head. But Schnitzel's tongue, long and moist and effective, found Bill's face in a gesture of apology and pleading.

Bill Stevens sputtered and sat up, wiping his lips with the back of a hairy hand. He rubbed the back of his head, as if to clear his brain, dull from sleep and a mighty hangover. His bushy brows wrinkled questioningly.

"What's up, Schnitz?" he grumbled. "Got the heebeegeebees, or somethin'?"

Schnitzel bounced and bobbed ludicrously on the torn and soiled bed coverings. His long, limp ears flapped, and his eyes, brown and soft as those of an

angel from dog heaven, expressed at once troubled concern and jubilation at his success in awakening his master.

Bill's blurred gaze traveled around the untidy interior of the shack, halting at last at one of the windows. Immediately there was a subtle change in the old man's languid attitude. He didn't betray any evidence of wild excitement, even though what he beheld was ample excuse for so doing. And he didn't seem to be paralyzed with consternation, either. But his gaunt, powerful frame, a moment ago derelict and hopeless and indolent, appeared abruptly to take on the poise of purpose and interest that had not animated it since a certain hectic squabble in France.

"Much obliged, Schnitz," he rumbled quietly to the little dachshund. "Reckon you were right in routin' me out."

QUICKLY, Bill swung his long legs, clad in heavy, winter underwear, out of bed, and pulled on his trousers, socks and boots.

Not until then did he move close to the window, beyond which gigantic mountains reared, ominous and jagged and unfamiliar, in an illumination as different from the daylight he had always known as the ruddy glare of heated iron differs from the yellow flame of burning sodium. Like Schnitzel, whining plaintively beside him, Bill could sense the lurking presence of the threat of death.

Even before he began a careful scrutiny of the scene within view, he proceeded to analyze that uneasy feeling. The air in the shack was dense and humid and warm. In it there was a mixture of odors that reminded Bill of other, earlier experiences of his life. In his fancy he was standing again on the soggy duck boards of a trench; he was hearing the dull *cr-r-rump* of gas shells, and *br-r-r-r* of a warning horn. And he was seeing blobs of poisonous, chemical fog, spreading and flattening.

The present odors were faint—too faint to demand active attention as yet, even if there had been any means, which he could think of at the moment, to make such attention possible.

Now Bill surveyed what lay beyond the smeary window. The mountains were there beyond doubt, even though, to the best of his knowledge, they must have sprouted over night. At their bases, visible through a greenish-yellow murk, was a jagged plain of gray, pumicelike stone. Nearer, the plain ended in an abrupt drop, forming a sort of cliff, the face of which was glassy and smooth, as if fused by terrific heat.

Looking to right and left, Bill saw that the cliff continued around in an arc, forming the walls of an immense pit, the bottom of which, even in this hell of incomprehensible miracles, cupped familiar things! Off to the left, a couple of miles away, was Fenton's woods. In an opposite direction, and at a somewhat lesser distance, lay La-Belle! The red illumination, which found its way to the ground through a miasmic fog, was of a quality that made it seem artificial, and lent an alien cast even to landmarks well known to Bill.

THEN he saw a sun, huge and red, rising in the gap between two monster mountain peaks. A little higher up, and apparently smaller, though this latter condition was probably due to a greater distance, was a second orb, quite like the first. Both were fuzzy and blurred; nor was this entirely an atmospheric phenomenon, caused locally by the murk in the air. These twin, or binary, suns were not ruddy because they had passed the hot glory of their prime; rather, as the age of stars is measured, they were very new, having just contracted from the tenuous nebular stage. Wispy rings of nebulous matter still belted the equators of both. In ages to come, these suns would contract farther and grow hotter. The metallic vapors now in their

photospheres, blocking their internal light, would sink to their centers, and they would shine, first, with a yellow light, and then with the dazzling, bluish glare of incandescent hydrogen, becoming stars of the Sirian classification.

Bill Stevens had no claim to scientific erudition. But he was aware that neither of these hot bodies was the old familiar Sun of Earth. This was additional proof that the wild, mountainous terrain around the vast, cliff-encircled hole did not belong to Earth at all, but to another planet!

What, then, was he, Bill Stevens, doing here? And how could anything as huge as LaBelle and its surroundings be transported here intact?

Bill was badly mixed up by the jumbling of incongruous elements; but his phlegmatic nature enabled him to keep a firm hold on himself. He studied near-by things intently.

Almost imperceptibly the haze in the sky above was thickening. The death smells in the air were a trifle stronger now. Up high in the red light Bill saw a swirling cloud of specks that were like nothing he had ever seen before. From that cloud came disquieting sounds that resembled the distant and muffled babbling of an excited multitude. And over LaBelle Bill could make out other, much larger swarms of specks that seemed, somehow, in some strange way of theirs, to echo the loud, insistent clanging of the ancient and for-years-unused fire gong, which some one was pounding, doubtless to warn late sleepers of what had happened.

BILL knew the need for hurry if the problem of his personal survival was to be surmounted. There was a taint of chlorine in every breath he drew into his lungs, and that taint was increasing. The pungent, suffocating odor of it was faint and disquieting in his nostrils, mixed with other pungent, suffocating odors. Among them there was

just the dimmest suggestion of an effluvium not unlike that of green corn that had been crushed. It was the odor of carbonyl chloride, or phosgene, most subtle and treacherous of the gases employed during the War days that Bill remembered.

Yes, there was need for hurry all right! These virulent poisons must exist naturally here.

But in spite of the throbbing misery in his head, Bill was hungry. So, applying common horse sense to circumstance, in so far as the question of his next move was concerned, he proceeded to rustle up some breakfast. A man couldn't do his best on an empty stomach. Bill Stevens could get a lot of bread, sausage and cold coffee inside himself in as short a space as thirty seconds.

"Big days have come back, Schnitzie!" he declared pleasantly, as he tossed a hunk of sausage to the dachshund, whose instinctive fears were somewhat allayed by his master's coolness.

And from Bill Stevens' viewpoint, perhaps truer words could not have been spoken. The old reprobate didn't realize it; but since the World War he had been a social misfit. Trench life had made him too hard and too cynical. Bill despised luxuries; money was not worth the trouble it took to get, and pride was a mere nothing.

But now, mystery and horror and sudden death were real things again. There were people to protect, and unimaginable forces to combat. Bill Stevens was rejuvenated.

With food safely under his belt, the old adventurer yanked a faded red sweater over his broad shoulders and crammed a crumpled black hat, badly chewed by Schnitzel, over his tangle of white hair. A stubby Winchester, its blued barrel worn silvery in spots from many hunting seasons of service, was taken from its case with a care that was born of love.



"Come on, Schnitz," Bill ordered. "I reckon we got to go to town."

A MINUTE or so later his ancient car was headed toward LaBelle. As he drove along the concrete highway, Bill glanced to right and left at the thickening but still faint haze. He crouched a little. His chest was beginning to feel as though he were catching a bad cold. Chlorine did that. Bill stepped down hard on the accelerator. His jaw was set in a hard line, and the light of the red suns glinted in fierce reflection in his small blue eyes.

"Mr. Edwin Davis, Schnitzie," he said. "Kind of a high-fallutin' fella, I hear, but we got to talk to him."

It didn't take Bill long to reach Edwin Davis' residence and workshop, for he allowed none of the mad miracles which he saw along the way divert him; and he would have got inside if he had to break down the doors.

Ed Davis was young and rather nice-looking. But to put it mildly, he was not at his best now. It was with difficulty that he controlled his voice when he replied to Bill's soft yet grim suggestions.

"Help?" Davis demanded incredulously. "How? I don't pretend to understand much of what it is that's happened; but I know some of the things that we're up against. I was awakened before dawn by a queer, humming sound; I saw that everything was a mess of green fire, and that the air was full of those gray, living crystals. There was no heat in the fire, and after a few seconds it died out. It wasn't till then that I noticed people were screaming as though they were watching the end of the world. And as far as any one in LaBelle is concerned, that's perfectly true! Do you know where we are?"

Bill nodded hesitantly, for he was a bit out of his depth. "Some other planet, I guess," he rumbled. "Maybe Mars, or somethin'."

Davis shook his head, gave a ragged sigh. "No, not Mars," he said. "Mars belongs to the same Sun the Earth does. Don't ask me how it all happened. But, as you've probably noticed, we're in the neighborhood of two stars. They rotate around a common center, and the world we're on is a planet of the nearer of the two. We didn't just go to bed last night and wake up this morning, my friend! We've traveled over so many miles that the figure alone would make you dizzy! And the trip must have taken time! Now we're on a world with an atmosphere so full of poison that nothing Earthly could ever stay alive in it. The only reason why the air outside is still breathable is that most of it is Earthly air, brought here just as we, and everything else, were brought here. But just as soon as the wind gets a little stronger it will all be blown away! And then—well—you know the answer!"

But Bill Stevens didn't seem disappointed. He scratched his head reflectively. "I sorta figgered that was the way it was about the air, Mr. Davis," he said. "But look! They used to get gas out of the air durin' the War, so a man could breathe all right. Now there ain't gas masks enough to go around, but there are other ways. This is pretty important business, Mr. Davis. I don't like to see folks die. You can hear 'em holler now, out there in the streets. It's sorta pitiful, Mr. Davis, and we ain't got much time!"

THE sweat of horror dampened Edwin Davis' forehead. He leaned weakly against the laboratory bench where he had been analyzing a sample of the atmosphere, and glanced at a window beyond which the hideous, ruddy daylight shone. Muted by distance, he heard human screams and shouts of terror. Children were crying.

Suddenly the inventor's lips curled in a wild leer. "Damn you!" he yelled.

"Don't you think I understand how terrible it all is? But you don't know what I know! Even if we did lick the gas for a few hours or days, it wouldn't do any good in the end! There's oxygen here in this hell hole of a world—I'm sure of it because of the high percentage of oxygen in the samples of air I've been testing. And there's carbon dioxide, too, and nitrogen. But then there's sulphur dioxide and sulphur trioxide, which, I suppose, come from the many volcanic vents which must exist on this primitive planet. The chlorine must have the same source, being released from its compounds by some chemical process going on underground. A little of it, under the influence of Sunlight, combines at once with the traces of carbon monoxide emitted by the volcanoes, to form  $\text{COCl}_2$ , or phosgene. Now, you old fool, get out of here and leave me alone, before I go crazy and get rough!"

Bill grinned briefly. He leaned his Winchester against the wall, and his big shoulders hunched.

"Rough?" he questioned. "No, it wouldn't be smart. You'll be all right when you get hold of yourself. Now come on; we're goin' places."

"It isn't only the gas that scares the people; it's those flying crystals!" Davis shot back. "They're swarming over the whole town! The mob is almost mad with fear. You couldn't handle it! No man could!"

"I can try handlin' it," Bill returned grimly.

"You bet Bill can handle a mob, if anybody can!"

Both men turned toward the source of the voice. It was a rather husky voice, but not unpleasant; though there was a waver in it now. The girl wasn't one of these pretty-pretty girls, though she looked all right, standing there in the doorway. There was a small scar across her freckled nose, a scar acquired as a result of a minor explosion in a

university chem lab. But she had dark, wavy hair, and big, brown eyes, misted now with tears of concern over what was happening in LaBelle. She was wearing a work shirt, corduroys and boots.

"Hello, Jennie!" Bill greeted briefly. "And much obliged for the good word. You ain't bad yourself!"

"Miss Jane Terence," said Davis, "my assistant. You know each other?"

"Yeah," Bill returned. "Jennie's the toughest little brat that ever swung a fish pole. We used to hang around together a lot, when she was knee-high. I'm Bill Stevens, if you don't know. And now, if you got gas masks for all three of us——"

"Yes, but not for the dog. We've used masks quite often in our experimental work," said Davis, a new confidence animating him.

The masks which he procured were not of the old, uncomfortable, nose-clip kind used during the World War.

### III.

THE inventor's big car took the trio nearer to the business section of town. After a brief conference, Bill parted from his companions, who drove off to attend to certain vital business. But Bill kept the unprotected Schnitzel, and his Winchester, with him, carrying both under an arm.

Bill pulled the flexible mask from his face. It wasn't absolutely necessary yet; but the air had a scalding, choking tang. Bill hurried along the sidewalk at a run. He reached the rows of brick-fronted buildings where the stores were located. But there didn't seem to be anybody in the stores at present. Almost the entire populace of LaBelle was jammed in the street.

And fifty feet in the air, hovering and swirling over the terrified mass of humanity below, were countless sentient shards of gray. Frequently, one or sev-

eral of them would dart down and circle the head of some panic-stricken individual. And from the alien swarm there issued a clamor that reproduced, like a delayed reverberation, almost every sound made by the frightened crowd.

Bill looked up anxiously at the gray crystals. In them he sensed the possibility of deadly danger; but for the moment, at least, there seemed to be no real harm in them. They appeared only to watch the chaotic proceedings beneath them with a keen, clinical interest. In consequence, Bill, ever practical, directed his attention to more pressing necessity.

He knew that unless something was done, real tragedy might result from the mob's stupidities alone. And so he climbed to the top of a parked car. Needing a means to attract attention, he fired his Winchester into the air. The sharp report echoed between the buildings, and reverberated across the floor of the vast hollow that cupped these few square miles of familiar Earthly country. Then there was comparative silence in the packed and struggling multitude. The crystals became suddenly mute, and more attentive, even, than before. They made no attempt to imitate the noise of the rifle.

"Ain't any of you folks hungry?" Bill asked, addressing the citizens of LaBelle.

He didn't seem to shout; he gave the impression, rather, of speaking only in a casual, conversational tone. But his deep voice carried like the growl of a foghorn.

"Ain't nothing goin' to stop me from havin' breakfast," he went on. "And so I filled up. So did Schnitz here." Bill nodded toward the dachshund, which, by what seemed almost a piece of jugglery, he still held under his arm, along with his rifle. "Reckon that anybody that neglects his breakfast, when there's maybe a lot of work to be done, is bein' kinda silly. If it wasn't too late now to

tell you folks that forgot to eat to go home and raid the pantry, I'd do it."

Bill paused for a moment, masticating his cud of tobacco with a humorous, reflective air. No one could laugh now, with death—under alien suns, and in an alien atmosphere—a definite possibility which might be fulfilled within the next several minutes. But every member of his human audience of perhaps five thousand, almost the total population of LaBelle, must have been reassured a trifle by his good-humored lack of excitement.

"No use worryin' about those gray, flyin' things," Bill continued. "Far as I can see, they ain't more'n botherin' you a little—yet, anyway. Right now, though, you got to go to a place where you won't be gassed. There's several good-sized buildin's on this street. There's the armory, and there's the movie house, and there's a church—room enough for everybody, if you crowd a little. The air in those places is gonna be kept pure. The stuff to do this with is comin' up right away. Mr. Edwin Davis, the inventor, and his assistant, is gettin' it. Now all we got to do is open up those buildin's so you can get in. Somebody here oughta have the keys. How about it?"

After a moment of uneasy scuffling in the throng, two men called out. One had the keys to the theater, the other to the armory.

"That's fine," said Bill. "Now is there some young fella who'll bust a cellar window of the church, crawl in and go around and open the doors?"

From the far end of the crowd, Bill received a prompt response from several well-qualified individuals.

"All set then," Bill remarked casually. "Move slow, everybody, but not too slow. I guess you can tell which of those three buildin's is nearest to you. If you get scared and start to push, just think twice. I got a rifle here, and I'm a damn good shot."

That Bill Stevens, lazy, booze-sotted old fellow that he had been, should dare thus to speak to the worthy citizens of LaBelle was indeed a fantastic situation. And it was perhaps still more fantastic that they should obey him. But they were doing so with a fair degree of orderliness. Calm strength, which he was showing now, is one thing that is universally admired and respected.

MOTIONLESS, Bill watched, while his audience gradually dispersed. His own breath was getting scratchy now, and Schnitzel was panting heavily. There was a look of worship and pleading in the dog's eyes that made Bill's heart ache. And so he climbed off the top of the car, accosted a kid headed for the armory, and passed Schnitzel to him.

"Take good care of the pooch," Bill ordered. "He's all I got."

Then he refitted the gas mask over his face, and waited, meanwhile looking up toward the crystalline swarm, which wavered and swirled overhead, like a mass of mosquitoes endowed with an inexplicable curiosity. The strange hush that had fallen over them when Bill had fired his rifle, still persisted. Their movements were tensely slow. Bill had only the dimmest conception of what they might be; but somehow he felt that they were like spectators, gripped by a dramatic incident of some vast play. In the old adventurer's heart there was a tingling thrill of awe.

In the street, deserted now, a car halted beside him. Behind it, a large truck jarred to a stop.

"The stuff's here, Bill. We got it all at the Benson battery works." It was Jane Terence speaking from the car, her voice muffled by her grotesque mask.

Beside her, driving the car, was Davis. And in the back seat were two other men, their mouths and nostrils covered by chemical-soaked pads of

cloth, their eyes protected by goggles.

"Mayor Greshwin, and Jerry Mason, chemist for the battery company," Davis explained. "Both capable, I'm sure."

Bill approached the car. "Things couldn't be much nicer, your honor," he said. "I can count on you to keep order in LaBelle. Mr. Mason, you can be mighty helpful. Did Mr. Davis tell you what we needed done?"

"Yes," said Jerry Mason. "The theater and the armory and the church all have good air-conditioning systems. We've brought gasoline engines to run them, now that the electric power is off. The air that is forced into these buildings is sprinkled. That, in itself, should take a little of the chlorine out, because chlorine is soluble in water. But if the air is forced through several layers of felt, soaked in caustic soda, or sodium hydroxide, the dangerous part of the chlorine will be licked, because sodium hydroxide reacts with chlorine. Most of the phosgene will be cleaned out that way, too, and the gaseous, acid-forming sulphur oxides will, of course, be neutralized by the caustic base. So there you have it. We can hold out for a few days, but I—I guess there's a limit to our luck!"

"I know," Bill responded. "Well, then I can leave LaBelle in the care of you and Mayor Greshwin. Reckon you can find groceries to feed the bunch. And you'll have to get some fellas with guns to kind of watch the people so no lunatics go off half cocked. And you better try rescuin' the folks that stayed home—if they're still healthy enough. This pea soup is gettin' pretty thick."

"What are you going to do yourself, Bill?" Jennie demanded worriedly.

"I'm gonna look around," said Bill. "I'm gonna try to find a safe place where everybody can stay—permanent—if there is such a place around here. I'll need Ed for this, and I figger you might want to tag along, too, Jennie. You got stuff that'll make you plenty useful."

Greshwin and Mason climbed out of the car and Bill got in. The chemist had work to do that must be done quickly, before the oxygen in the three refuges were used up by the multitudes that packed them. Anxious and hasty good-bys were spoken, by voices muffled behind masks. The wind was blurry with poison that had become strong enough to kill.

"Where to?" Ed Davis inquired of the old adventurer behind him.

"Still got that plane you used to own?" Bill demanded in return.

"Sold it," said Ed. "But George Schroeder, out on Highway 17, has one."

"That's where we're goin'," Bill stated.

WITH A ROAR of determination, borne of human hope, hope which worthless old Bill Stevens had aroused, the car started off through the streets, which were peopled only by occasional, sprawled corpses.

And then Jane Terence gave a choked scream. The reason was apparent at once to her companions. Beyond the closed windows of the car hundreds of gray crystals, ejecting emerald sparks to propel them in their outlandish flight, were swarming and circling, as though they knew that here must be the center of the weird drama that they had arranged.

In another moment there was a sharp splintering of glass, as one of the nameless things shot, bulletlike and purposeful, through the window, and, with a soft, hissing sound, flew about the narrow interior.

Davis, controlling himself with great effort, clung grimly to the wheel and kept the car on a straight course. Jane ducked, and Bill, prompted only by instinct, sent a big hand darting out in a swift gesture.

His fingers closed on the intruder. Oddly, it made no effort to escape, but

rested impassive in his grasp. But Bill could feel the pulsing of the eerie, alien vitality that animated it—little electrical tingles—*throb, throb, throb*. The crystal seemed to have a temperature slightly higher than that of the atmosphere. The regular electrical throbbing must have been one of the many manifestations of life processes, based not on the feeble energy drawn from the chemical union of oxygen and food, but on the limitless power of disintegrating atoms.

No one spoke as Bill relaxed his grip a trifle, to peer at the small, captive monster. Though a crystal, it was rather irregular in form. Its length was perhaps half an inch, its width a bit less. Its shape was octagonal, except that from its main mass there were slim, blunt-ended projections, arranged like the buds on the stem of a bush. The gray, slaglike material that composed the thing, was almost lusterless; but there was a dim, green glow on its surface. Its subcrystalline structure was revealed by the intricate crossing traceries of faint dark lines, like minute cracks. Each of the hundreds of divisions thus indicated was like a cell, comparable to, yet differing immeasurably from the cells which compose an Earthly plant or animal.

"I think we got somethin' here," Bill muttered. "Look!"

Leaning forward from the back seat of the car, he held the enigma of incredible meaning between his two companions ahead, so they could see, too.

Meanwhile, Bill's awed gaze wandered to the swarming horde of the thing's fellows in the poison-tainted, red-lighted air without. And then he felt an aching numbness creep slowly up his arm from the hand that held the crystal. The gray unknown did not possess eyes of a Terrestrial sort; but who could say that the senses hidden in its unfathomable texture were hampered by the same limitations imposed upon

human vision? Men have no sensory organs with which to detect radio waves; but who knew that this sentient mystery, that could create from within itself all the possible types of etheric vibration, could not also detect all such vibrations, and interpret whatever meanings and information they chanced to bear?

It was as though the crystal was tapping the nerve channels of Bill's arm with exploring radiations, and reading not only his conscious thoughts and motives, but probing out the very essence of the forces that made him and kindred Earthly things—alive.

Maybe it was only a mental illusion, but it seemed that the process worked both ways. Bill was receiving dim, haunting impressions of a mighty history on worlds incredibly different from his own. Bill's knowledge of science was scant, but he could understand a little. These hard, brittle, alien beings had been produced by an evolutionary development, too. Once, incalculable trillions of years ago, their ancestors had been as unintelligent as the insects of a Terrestrial forest; but the mental capacities of the race had grown, giving to each individual an increased control over the



*The sphere seemed to be melting or sublimating. Within it was a purplish, opalescent mass—nameless—but still alive.*



atomic forces which gave them their physical powers and made them almost gods.

IN A VAGUE, hazy manner, Bill grasped these truths. He received impressions of a time, long, long ago, when exploring ether waves had groped across the intergalactic immensities. Those waves had been reflected back to their source, bringing information. Then had come the impulse to act—

"These things!" Bill stammered unsteadily. "They brought us here!"

With eyes wide in wonder, Ed and Jennie were examining the marvelous, tiny being, Ed dividing his attention between this scrutiny and the driving of the car.

And then Bill felt the crystal vibrate in his hand. It was only a simple, material vibration, unlike the palpable waves of the ether; but when transmitted to the air it became sound—a tinny, muffled, ludicrous duplicate of Bill's own voice, repeating with parrotlike perfection, the words:

"These things. They brought us here!"

For a second the three humans were gripped by a stunned silence, in spite of the fact that they had noticed before the aptitude of the crystal monsters for imitating sounds. They merely vibrated their bodies, as the diaphragm of a loud-speaker, is vibrated by electromagnets; that was all. But the simplicity of the phenomenon's explanation detracted little from its ability to startle.

Then Bill, inspired by some dim hope, tightened his grip on the crystal, to be sure that it would not escape.

"This thing could talk English!" he grated. "It could get all the words it needs from me. It can read my brains like a book!"

"I can read your brains like a book!" the crystal stated, leaving no doubt in the minds of its listeners that its powers, where human speech was concerned,

went beyond mere mimicry. It still spoke in the voice and manner of Bill Stevens; but there was no confusion of identity now. The pronouns, "It" and "my," had become "I" and "your."

Bill was ever watchful for an opportunity to improve the position of his kind on this strange world. So, now, he became possessed of a grim, pathetic idea.

"So what?" he growled. "I'm hangin' onto you, you little devil, and I'm gonna squeeze, and I'm *not* gonna let go until you do plenty of talkin'!"

Under other, less trying circumstances, the response of the crystal would have been laughable from the human viewpoint, so perfectly did it ape Bill in an angry mood.

"Is that so, you old fathead!" it rasped. "Well, you'll find out damn quick what's what! You want me and my friends to take you back to Earth. Well, we ain't gonna do it! You and all the folks in LaBelle are gonna stay right here on this planet! And we're gonna watch you, and see what you do! If you're askin' for help already, you just better forget it! Meantime, here's a kick in the pants for you!"

Escape from Bill's grasp was not at all difficult for the crystal. Suddenly the temperature of the gray, octagonal bit of alien life increased by hundreds of degrees. Bill gave a muffled exclamation of pain. His fingers relaxed, and a puff of smoke arose from his seared palm. Uttering a sound like human laughter, the crystal smashed back through the window of the car, to rejoin its fellows.

"It seemed so human!" Jennie said in dazed, terrified surprise. "I felt almost friendly toward it at first, in spite of its apparent rage! And then I realized the truth! It isn't human at all, and probably it wasn't angry at all! It was just imitating a human mood, though it probably meant what it told you. Is your hand hurt bad, Bill?"

But dread and wonder made Bill Stevens truculent, and emphasized in his mind the vital need for haste.

"Let's not talk," he growled. "Let's just gallop along to George Schroeder's place."

#### IV.

THE CAR was speeding along a concrete highway now, out in the open country. The wind had mounted and had grown as hot and steaming as a Turkish bath. Through the fog, the red suns, climbing rapidly, shone with a sullen, slumberous light.

And the host of flying shards was still a present reality, following the car, twittering elfinly. Now and then a crystal would voice a word or phrase or imprecation in Earthly English: "Fat-head! . . . We ain't gonna do it! . . . Is your hand hurt bad, Bill?" They seemed to mimic only what the occupants of the car, and their fellow, who had been in contact with Bill's flesh, had said, though it was probable, considering their mastery of etheric waves, that they could read minds even at a distance.

At last Bill Stevens and his companions reached the Schroeder farm. The place was deserted. But George's old plane was in the shed, where it had been stored for the winter. Its wings had been removed to allow it to enter the narrow space. But the masked trio had tools, and it was do or die, so they went to work with a will.

The fierce wind still blew when the task was finished. Dark clouds, red-fringed, swept across the suns at intervals. And the motor of the plane was not in the best of condition, sputtering unevenly. But Davis and Jennie and Bill realized that this was war—a war against the unknown—and whatever the adverse circumstances, they still must be met with action.

The ship was rolled out into a pas-

ture, close to the shed where it had been stored. The three adventurers climbed aboard, and with Ed Davis at the joy stick, took off into the turbulent, murky air.

Ed guided the plane toward the deep pass which traversed the tremendous mountains. Below, Jennie and Bill, keeping a close watch from the forward passenger cockpit, saw the steep walls of the great, craterlike depression, in the center of which LaBelle rested. Now the plane surmounted that wall, and began its wheezing, uncertain progress up the pass, while the two observers kept on the lookout for some ledge or valley where their people might attempt to establish homes.

The swarm of watching crystals, which had not deserted the Earthians for a moment, dogged the plane with a vulturelike persistence. Though it faltered often, the craft, skillfully guided by Ed Davis, at last climbed over the highest portion of the gap between the mountains. Now, for a little time, it could glide downhill, relieving to some extent the strain on its overheated motor.

The pass flattened out to form a jagged expanse of country, its details blurred to ghostly indistinctness by the haze. Then, far beneath them, and separated by a considerable distance, Bill and Jennie made out two colossal pits, identical in superficial appearance to the one that cupped LaBelle.

"These must be other colonies brought here from Earth!" the girl burst out, trying to raise her voice above the noise of the motor. "Maybe the people in them have learned what to do to keep on living! Maybe they'll help us——"

But then Jennie's eagerness wavered and disappeared. The contents of both pits were different by far from anything known on Earth.

The more distant of the two held a

patch of reddish desert, bisected by a dark, straight band, in which there was a gleam of glass and metal, bizarre in its implications.

The other vast excavation harbored a sea of whitish vapor, through which grotesque and distorted things protruded.

In the mountain pass the air had been fairly quiet; but now a fierce gust of wind struck the plane and tipped its wings at a steep, dangerous angle. A miniature whirlwind, created out of the erratic currents which blew over the mountains, jerked the nose of the old crate sharply upward. The left wing crumpled backward with a grinding, grating sound as metal struts buckled and snapped; then its weakened structure held, vibrating badly, and threatening complete collapse at any moment.

SOMEHOW Ed Davis, at the controls, managed to level off. To attempt a landing was the only possible resort. With an odd, detached calm he went to work, ignoring the crystal horde that shrieked and whistled around him, as if to express the thrill of this new development. Beneath was the great pit of the white vapor; and to bring the plane to rest anywhere other than within its barriers was a thing not to be hoped for, even if there would be any advantage in a landing on the jagged, surrounding country.

Ed dipped the nose of the ship for a glide. Presently streamers of fog closed around him and he could see nothing. Then came a dazing, thumping crash. The plane turned over on its nose. Half stunned, Ed still could hear the voices of his companions, and the vast, soft crying of the crystals. Presently Bill Stevens was pulling him out of the wreckage of the plane, from which an ominous thread of smoke was rising.

"I guess that finishes us, gang," Ed muttered, looking up at the gray shards

that shot, bulletlike, through the fog. "It's a long way back to LaBelle. If we have to walk, we'll never make it. For one thing, the air-purifying chemicals in our masks won't hold out long enough. Where—where's Jane?" he stammered in sudden panic.

"Here, Ed," she quavered from behind him. "I'm all right if you are." Her slender hand found his shoulder reassuringly.

The inventor gave a shaky laugh of relief. "Just bruised up," he said.

Bill was cursing the crystals with lurid, vengeful abandon, and they, in their turn, were hurling his curses back at him.

Ed's mind was clear enough now for him to feel anger, too. "What do you expect us to do now, you crazy devils?" he shouted hatefully.

The alien shards must have found an importance in the question, for they stopped exchanging unpleasantries with Bill. One of them, a little larger than most of its fellows, circled Davis' head. After a moment it spoke, imitating now the inventor's voice and manner of speech; for doubtless it was from his brain that the words and expressions it used were drawn.

"We expect you to do just as you choose. We want you to act naturally, working on your own judgment and drawing your own conclusions from what you observe. Obviously, then, we cannot give you advice or more explanations now. That is all. Proceed."

THERE WAS something brutal and unyielding in the crystal's statements. Ed Davis felt chilled to the bone. And then he realized that the chill was not solely emotional. It was bitterly and damply cold here in this white fog that filled the great hole in the crust of this primitive planet.

"Ammonia!" said Jane Terence. "I can smell it even through my mask!"

All three of the adventurers looked

about them in an effort to find explanations for the many mysteries of their present environment. The first thing that caught their attention was the plane. It had begun to burn now. The flames shooting up from it were all enveloped in a bluish halo.

The phenomenon aroused a disquieting, nervous tension in Ed Davis; but before his mind could complete the proper memory connections, so that he could grasp the nature of the fire's blue aura, there was a low but stupendous *whoosh!* For a second, Bill and Jennie and himself were surrounded by blue flame that made their clothing smoke and singed the short hairs from their exposed hands.

And then Ed Davis had the answer. "Methane!" he burst out. "Marsh gas! Or at least something pretty much like it! Methane burns blue that way. There was quite a lot of the stuff here in this hole, and the fire from our ship ignited it!"

Like a great, circular wave, the flame moved outward through the fog of the pit, provoking among the crystals that had congregated in it a fresh outburst of excited yammering. In a few seconds the methane was burned from the atmosphere, and the flame vanished; but the monstrous sigh it had made endured as a fading echo for some moments longer.

"Zowie!" Bill growled, brushing sparks from his sleeve.

But both Jennie and Ed were in their element now. Here, before them, around them, was a new riddle to solve.

The air had become warmer and clearer after the passage of the flame. Visibility was a bit better than before. The ground, glassy stuff, native to this primitive world for the most part, was flecked with large areas of viscid, bubbling foam. A huge wheel, tipped fantastically at an angle in a maze of massive and complicated junk, lay a hundred feet distant, sentient, crystalline be-

ings circling it exploratively. Small, intricate objects of metal were scattered about underfoot, giving evidence of a science of considerable advancement.

"What do you make of it all, Jennie?" Ed Davis inquired at last.

"That's not such a very hard question to answer," Jane Terence responded in her husky voice, awe plainly evident in it. "The ammonia and the methane give us one clue. The atmospheres of large planets, such as Jupiter and Saturn, contain an awful lot of those gases. That foamy stuff there—it's all that's left of certain things brought to this world in the same way that La-Belle was brought. But here the lack of enough pressure just made them evaporate. They were made for the conditions of a far different planet than this—a big planet with plenty of gravity, and a deep, dense atmosphere to build up pressure. And the heavy construction of that machine, or whatever it is, over there, shows that the gravity was present, all right. Liquid ammonia must have taken the place of water on that other planet where all this stuff came from."

Ed nodded. "You're right, I think," he said. "This is some more of the work of our crystalline friends. The stuff in this pit could be a little sample of Jupiter; or, rather, what remains of that sample. Jupiter may be a rather cold planet; but part of the chill we felt before the methane burned was caused by the evaporation you mentioned. We learned way back that evaporation is a cooling process."

"What are you two chatterin' about?" Bill demanded with a trace of unwonted annoyance. "Come on! We got to try to get out of here! We got to keep lookin' for a refuge as long as we're still alive!"

## V.

PRESENTLY, in their tedious tramp across the floor of the pit, the

trio found a large, transparent globe amid a tangle of metal wreckage. The sphere seemed slowly to be melting or sublimating. Within it was a purplish, opalescent mass, nameless, but still alive. It squirmed there as if in terror. The adventurers had only a brief opportunity to examine it. Covered with sparse, hairy projections, it suggested a huge caterpillar. Then there was a loud, ringing pop, as a portion of the sphere exploded outward under internal pressure.

Twitching in agony, the opalescent thing, which must have been intelligent, considering the presence of the artificial integument which had protected it, oozed and bubbled out of the globe, changing to ammonia gas and white foam.

The Earthians had no definite proof, but it was fact that they were seeing one of the last of the unwilling colonists from Jupiter perish. Faced by grim, alien nature, Jovian wisdom had failed. It was a depressing thought, heralding to the Earthians their own defeat and extinction. The clamor of the crystal horde above had all the dismalness of sparrows chirping in the halls of a ruined edifice whose builders had long since departed.

"This place gives me the creeps!" Jane Terence declared bitterly.

Ed Davis grimaced behind his mask, which, he knew, would afford him adequate protection against the poisons in the air for only a few hours more.

Bill Stevens led the way toward the lip of the pit in the direction of the mountain pass, which could be made out through the thinning fog. He didn't have a very definite object in view; but he still hoped, somehow, to find a refuge for his people.

A crystal swarm swooped to follow. Out of their nerve-racking yammering there presently came to Bill a surge of smothering fury. Curses were inade-

quate to express it, but Bill still had his Winchester. He wheeled around, and, thoughtless of possible consequences, fired one shot after another into the alien multitude until the magazine was empty.

"You damn devils!" he yelled. "You brought us here, and you brought those Jupiter people here! What for? It looks as though you did it just for fun!"

For a moment it seemed that Bill Stevens had invited suicide, as the gray horde rocketed down toward him. But, considering their smallness, and the swiftness of their flight, the chance of hitting one of the shards with a bullet was remote indeed. He had done the crystals no harm.

They only circled him and his companions, meanwhile echoing in myriad elfin voices, overlapping and straggling, the single word: "Fun!"

There was no doubt that they had understood what Bill had said; for if they could not entirely grasp the meaning of his words by direct listening, they could fall back on the subtleties of their unique vibrational science to probe his brain. But how had they chosen the word "fun" as an answer? To suppose that the word was meant in its literal sense—that all their vast undertaking was only for fun—seemed ludicrous, grotesque and mad!

Then one of the little gray demons came to rest on Bill's arm, clinging there like a bit of steel clinging to a magnet. Again Bill was conscious of that peculiar sensation of a limited rapport with a crystalline intellect. A tremendous and thrilling, if borrowed, ecstasy swept over him. It could not truly be described as "fun," though there were many points of contact.

BILL knew now that he and his companions, the entire Earth colony, the Jupiter colony, and whatever other

samples of distant worlds might now exist here had been brought to this primitive planet to fulfill the conditions of some vast comparative and competitive experiment. But the real motive of that experiment, though Bill saw it dimly, was still hazed and clouded by the urges of an un-Earthly psychology, not easy for a man to understand.

Having imparted a fleeting impression of what it and its kind were like to him, the crystal broke contact with Bill's arm and flew away to rejoin its twittering fellows.

"Come on!" Bill growled to his two companions, sullen defiance still evident in his voice. He did not wish to discuss now the vague, haunting ideas that had silently entered his mind from the crystal.

He and Jennie and Ed scaled the precarious slopes of the great hole of the Jupiter colony, and continued on across the rough, rock-encumbered plain. Progress was slow. Now they passed through a clump of dark-green growths of a simple, primitive structure. These plants must have been native to this young planet, and adapted to its lethal environment. Now the humans circled an area of porous ground, still hot with volcanic fire. Chlorine was oozing through the pumicelike stone produced by some chemical process in the vitals of this world.

Gusts of scalding rain fell in fleeting showers from the clouds that scudded by above. Weary muscles grew more weary. Skin chapped and blistered in the unfamiliar and corrosive atmosphere. Thus the day, which must have been about half as long as a Terrestrial day, wore on.

The twin suns set in a blaze of red glory. A beautiful, murky dusk followed, alight with the now visible phosphorescence of the crystal swarms. On the jagged horizon a tiny, gray-green moon hung. Around it was a tenuous

halo of a similar shade; and it was not difficult to guess that that wispy band was composed of countless shards of crystal life. The moon was their home. Its color made that fact plain. Perhaps its entire mass, or at least its outer crust, was composed of those inorganic superbeings packed closely together, maybe to form a single Gargantuan intellect.

Detached bits of gray-green haze were visible in space—armies of crystals, moving back and forth between their moon and this planet.

Prompted perhaps by intuition, Jane Terence looked back suddenly.

"Gosh!" she gasped. "Look, fellas!"

The two men spun around.

THERE WAS something in the air above the hills and rocks over which they and the girl had just passed. It was a ghostly mirage, coming in from the vacuum of the void—a scene in phantom form. Through it a few faint stars were visible, though it was otherwise like a phosphorescent photograph, delineating in three dimensions a vast, steamy marsh, peopled by outlandish trees and giant ferns such as those which had existed on Earth during the Coal Period. Dotting the almost substanceless fabric of the mirage were many small, glowing crystals that seemed to be congealed in it.

The vision was moving closer, settling groundward. Like an elastic thing it quivered and rebounded momentarily, when it struck the substance of this world, to which it had journeyed across tremendous distance. Then it settled motionless in a hollow.

A fresh horde of crystals, numerically a thousand times larger than the one which followed and watched the three Earthians, pounced upon the intergalactic phantom, penetrating its tenuous texture, and taking up regularly spaced positions there. Then the crystal shards



began to glow—hotter, brighter, throwing off the corpuscular emanations and etheric radiations needed for a mighty recreative process. The ground on which the mirage rested threw up streamers of green flame, cold but brilliant, and began to dissolve; its substance being drawn, in the form of free protons, electrons, neutrons, and positrons, into the pattern of the ghostly mirage, there to compose new atoms, duplicating those of the solid realities of which the phantom was an impression.

The observers could see the green fire, composed of migrating matter, spread over the ground and dissolve it. In the emerald flame the mirage was solidifying, drawing substance from the crust of this young planet. Remotely, the process must have been related to that of simple electroplating—the transfer of metallic ions from a solution to the surface of some conductor by means of an electric current.

Finally, having served its purpose, the green fire died and the crystals receded. But they did not go far away.

FOR A MOMENT, dazed at the wonder they had seen happening, the Earthians studied the new colony, which rested in a pit just like those of the other colonies. The pits were merely great holes left after the rearrangement of matter to compose the things they contained.

Huge ferns, revealed by the light of the gray-green moon, gigantic spore trees, sprouting out of the muddy marsh—a monster, wavering crazily through the air on long, outlandish wings, to crash in its death agonies amid the vegetation of its native haunts—Poison gas was something the monster was not built to endure. But perhaps a few of the plants might manage—All around, crystal hosts were watching and twittering. For the pres-

ent, confronted by a fresher marvel, they were paying scant attention to the three from Earth.

"Just a little bit of old Venus," said Jennie in her husky voice. "Or it could be. It's obvious now how LaBelle and the other colonies were transported here. But why? I don't see the crystals' motives yet!"

"They must have a reason—a very definite reason!" Ed Davis responded as they continued their march. "It might be though, that their purpose is beyond our understanding. They've advanced so far in science that now they're almost gods—stardust gods! Their economic system must be very simple; little effort on their part is required to fill the needs of life. In consequence, what have they left? Only curiosity—the desire to gratify the urge for more knowledge!"

"That's right, Ed!" Bill burst out suddenly. "I get it now! Those two crystals—the one I held in my hand when we were drivin' in the car, and the other one that was on my arm not so long ago—sorta let me see with my brain just what makes 'em tick. But I couldn't understand all of what I saw right away. Now I think I do. Bringin' those samples of things from other worlds here is kind of an experiment, all right; but, believe it or not, it's more like a kind of game! The crystals said 'Fun!' Remember? They didn't mean it quite like that, but almost!"

Davis shook his head. "Do you mean to say," he questioned, "that they brought the colonies here across countless light years, mostly for no other reason than entertainment?"

"That's what I mean," Bill answered promptly. "You had it just about figured straight when you said that they didn't have nothin' left but curiosity. You got to look at things the way they do, Ed! Suppose you didn't have to bother much about makin' a livin', and

suppose you knew just about everything, and was almost immortal. Suppose, without half tryin' you could work wonders. What would you do? Just sit and twiddle your thumbs? For a little while, maybe; but not for ages and ages! You'd go out and work them wonders just to keep busy, and even if there wasn't much serious purpose back of 'em! Fact is, knowin' and bein' able to do most everythin', you wouldn't be able to find a real, honest-to-gosh, life-and-death-serious purpose, no matter how hard you tried! Well, that's the position the crystals are in, damn 'em!

"They're like kids at a circus now, watchin' the animals perform. They're enjoyin' themselves and learnin' a few things, too; though what they're learnin' isn't anything of which they can make real, practical use. The enjoyment is more important. They get enjoyment out of studyin' our minds and seein' how they work. They ain't never used machines, so the machines in La-Belle and those the Jupiter people had interest them plenty. That stuff in the Venus colony seems to have its points, too, the way they're lookin' at it."

ED DAVIS frowned thoughtfully behind his mask. Then he glanced first in one direction and then in another, and saw the beings which he himself had termed stardust gods, glowing like fireflies in the advancing night. Those that were near were attentively quiet now. Slowly they were circling the two men and the girl as they plodded on over the rough ground, making no sound except the whisper of their flight. They must have found human judgment of themselves interesting, but they betrayed no offense; nor was it logical that they should, since it was unlikely that they possessed the same sensitiveness so common among men. Kindness and consideration, and the other, finer sentiments, must also have been lacking in their natures, since such

things are born in adversity; and the stardust gods, in their present stage of development, at least, had never met with the mellowing influence of defeat.

So, at last, in Bill Stevens' homely explanation, Ed Davis recognized truth. "I guess you've got it straight, Bill," he said. "It's quite possible that the crystals have even made and destroyed worlds during the course of their history. And they've done it mostly for the pleasure it gives them."

Jane Terence nodded. "And now I suppose they're wondering what we're going to do next. Well, that other colony—the one we haven't seen close up yet—is from Mars. The dark band we glimpsed from the plane was part of a Martian canal. And there was desert around it. Yes, I'm sure I'm right! Do you fellas think it would be any use for us to go take a look?"

Ed shrugged. "Maybe," he answered. "But if you're expecting the Martians to be hospitable, I imagine you'd better forget the idea. Still, something might turn up."

"Let's hurry, then," said Bill. "But not too much. Chlorine's beginnin' to come through my mask. And there's a little phosgene in the air, too, remember. Kinda funny stuff—phosgene. A little of it don't hurt much, but if you get het up a lot, your heart just stops."

## VI.

THE REMAINDER of the trek was rather horrible. The stench of chlorine, seeping through the depleted chemicals of the masks, got stronger. But in spite of this warning that their time was short, the Earthians were forced to pause often for rest as a necessary guard against the phosgene.

Somewhere along the way Jennie expressed a strange, haunting thought. "Maybe it doesn't matter so much if we die now," she said. "Because if we ar-

rived here in the same way that the things from Venus did, we must be only duplicates of our original selves. Our other bodies must have lived through their natural span of years, on Earth, and perished, long ago."

But her companions were in no mood for a discussion of so deep a subject. Whether they were duplicates or not, the situation in which they found themselves now seemed hideously real.

Haunted by vague, jangled thoughts, the three kept on. At last they approached the lip of the Martian pit.

From its brink they looked down. White light flickered ahead, illuminating an expanse of desert ground, soaked with water now from a shower, and dotted with wilted, bulbous growths that could never survive here. But the light came from the deep, straight gorge beyond the stretch of desert, and it came through a vast sheet of metal-ribbed, transparent material. The gorge was roofed! Moreover, its ends were blocked by partitions of a similar substance. This small segment of a Martian canal was air-tight!

Beneath its roof, clear as unpolluted air on a summer afternoon, activity was in progress. Perhaps it would have been considered almost normal activity, even on Mars. At least the haste of fear and danger was not apparent. A great fan, which must have had a purpose in connection with ventilation, was turning slowly, its blades glinting in the light that flickered from globes suspended from the roof of the canal. Fantastic machines stood on their foundations. Water, gleaming in a network of ditches, supplied moisture to the roots of strange, feathery-leaved plants. And, crawling tediously along white paths, were tendriled gobs of drab gray—the Martians themselves.

So much the three from Earth could make out, though distance still hid much detail.

"Maybe our friends from the Red Planet are going to beat the rap," said Davis, his voice hoarse from the corrosive action of the chlorine that was coming through his mask. "At least they have a chance. For ages, on dying Mars, they must have survived by artificial means: melting the polar snows for irrigational purposes; freeing oxygen from mineral compounds; living in glass-covered canals, not daring, ever, to breathe the thin, almost oxygenless atmosphere natural to their planet."

"Good luck to them," Jennie commented ruefully. "I guess they deserve to win out in the contest sponsored by the stardust gods. I guess—I'm tired, fellas—I don't suppose it makes any difference, though. We can't do anything more—"

Davis wasn't feeling so good himself. His chest was choked up and his heart seemed like a big, throbbing, smothering something inside him. But he caught the girl before she could crumple weakly to the ground.

"Jennie!" he cried without thinking. "Jennie, my darling! That damned gas!"

And then he realized the irony of his words. For a year he and Jane Terence had worked together in his laboratory as friendly associates. But neither had betrayed any sign of sentimental attachment before. This was a funny time for him to start that sort of thing!

"I'm sorry," he mumbled.

"Don't be, Ed," Jennie returned, leaning against his shoulder. "I'm glad for those two words. Because, you see, I love you, too. And I'm glad Bill got us to try to do something. A great old guy, Bill—"

"I reckon we have to stop a minute and rest some more," said Bill Stevens. "With the load off our feet, maybe our brains'll work better and dope out some-thing' for us. Steady, Jennie. We ain't quite done for yet!"

HE HELPED Ed ease her to the rough ground beside a large rock. Then he threw himself down on his stomach and shut his eyes in an effort to relax and regain a little strength. Close above him he heard the crystals chuckling and muttering and seeming to urge him to rise that their sport might continue. Some of them were even speaking Earthly words that expressed some of the ideas hammering inside his brain: "Phosgene! Got to do somethin', but what? Poor Jennie——"

And then he detected a padding, scraping noise. There was a momentary note of fresh excitement in the voices of the stardust gods. A few seconds later Bill felt a long, smooth body snuggle against him. His head jerked up abruptly.

"Why, hello, there, Schnitz!" he muttered raggedly. Nothing that had happened to him during the past several hours had surprised him as much as the sudden appearance of the dachshund.

"What did you say, Bill?" Ed mumbled from around the angle of the great rock.

Bill didn't answer right away. Instead he fumbled over the little dog. There was a crude but evidently effective mask, hastily devised from leather and cloth and pieces of tin and wire, over Schnitzel's muzzle. Fastened to the harness he wore was a bottle wrapped in paper. Bill got the bottle loose, examined the wrapper. On the latter, a message was written in a large, clear hand.

By the flickering light from the Martian canal, Bill proceeded to read it:

Best we can do. Sorry. When you didn't come back, we decided that you were lost. So we sent the dog, who ought to be able to locate you, if anybody can, since I understand from a kid here that you're his owner, Bill, and since he should be able to cover rough ground much quicker than a man could. We just sicked him up the pass. Hope

AST—10

he finds you before the mask we rigged for him gives out. The bottle is filled with a strong caustic soda solution. If you pour it on the filter packing of your masks, it ought to help you three to hold out for a while. Fire broke out here, and we've got our hands full. Best luck!

The missive was signed by Jerry Mason, the chemist who was helping Mayor Greshwin in LaBelle.

Bill didn't waste any time. He bounced to his feet with the bottle of caustic soda and dashed around the rock to where Ed Davis and Jane Terence were sprawled. He didn't say much, but in a moment he was pouring strong chemical on the packing in the filter canister of Jennie's mask, and thus renewing its power to absorb chlorine and the other poisons in the air. Next Bill doctored Davis' canister, nor did he neglect a similar attention to the filter padding over Schnitzel's nose. Last of all he took care of himself.

MEANWHILE, Jennie and Ed had discovered Jerry Mason's note, which Bill had dropped. But as soon as the thrill of temporary rescue had passed, the clouds of defeat settled quickly again.

"In spite of Mason and Schnitz, we're almost as much in the dog house as ever," Ed remarked. "Perhaps we can return to LaBelle, if that does any one any good."

But Bill was looking down into the Martian pit, his small blue eyes narrowed. "Maybe I'm gettin' the makin's of an idea," he drawled at last. "You two just follow me. Let's go, Schnitz."

The old man and the dog led the way down the glassy slope. Ed assisted Jennie, who was still rather unsteady and weak, in spite of the purer air she was breathing now. They crossed the narrow strip of desert, to the edge of the canal.

Here they paused for a few seconds. The expanse of the transparent roof

glistened in the weird gray-green moonlight, and reflected the images of the flitting stardust gods, who must have already sensed the scheme in Bill's brain. Near-by, the open end of a huge pipe, which projected through the canal roof, and continued down to the apparatus of the great fan on the canal bed, sucked air with a steady whisper. Evidently the Martians, who crept tediously below, had already devised a permanent means of purifying the atmosphere of this planet, for clearly they were pumping it into their refuge.

Bill glanced around; then he approached a granite boulder whose weight would have been about three hundred pounds on Earth, and could not have been much different than that here, for the gravities of the two worlds were almost equal.

"Gimme a hand, Ed," he ordered.

"I believe I begin to see what this is all about," Ed Davis remarked grimly.

"Sure you do!" Bill shot back at him.

Together they picked up the stone, carried it the few necessary paces and flung it out over the canal. It struck the transparent roof with a loud, tearing thud, and crashed through. The glass of the roof was not of the brittle sort common on Earth; it was flexible and light, like cellophane.

Immediately there was a scream of intruding atmosphere. The air in the canal was of a much lower density and pressure than that above it; for the former was, of course, conditioned for Martian breathing organs. Now there was an equalization of forces. The domain of the folks from the Red Planet was swiftly being flooded with air that bore a deadly taint of poison.

SILENTLY, yet with muscles twitching with excitement and horror, the Earthians watched, as the flat, gray ovals which were the bodies of the beings that it was their purpose to dispossess, trembled and writhed in their death

agonies. Very soon it was all over. The huge fan still turned; the white light still flickered from the globes that produced it; the immense roof still stretched unbroken, except for one hole, beneath the sky of a bizarre, un-Earthly night. But the unwilling colonists from Mars, masters of an ancient and efficient science though they had been, were no more.

Ed was the first to lower himself through the rift in the transparent covering of the canal. He had to drop several feet to the ground beneath, that sloped steeply for some distance before the floor of the huge, artificial trench leveled out, becoming a flat expanse some five miles in width. Jennie came next, and then Bill and his Winchester. Schnitzel was last, sliding down nervously into his master's arms.

ALREADY there were crystals beneath the roof of the canal. Perhaps there had been a few here, even before the roof was punctured, having slipped through the ventilator system. They might, of course, have penetrated the canal covering, had they so desired; but had they done so gas would have entered, too, and destroyed the Martian colonists, which would have been inconsistent with their noninterference policy, which they had followed with only minor and judicious lapses.

The Earthians made their way toward the great rotating fan and the pumps connected with it, forcing their way through the delicate and now wilting fronds of bizarre vegetation, until they reached the first of the stone paths.

The flat, oval bodies of the Martians, armored by their gray exoskeletons, sprawled everywhere, glistening with an oily sheen in the uneven light. The latter could not have been intended primarily for illuminating purposes, for the Martians possessed no discoverable visual organs, but in their stead myriad flexible feelers, in which the sense of

touch must have been developed to a marvelous degree.

Perhaps in the dehydrated atmosphere of Mars, highly specialized eyes, such as human beings possess, could not have been produced; for such eyes must have a cornea that is constantly kept clean by moisture; and if the air to which that cornea is exposed is very dry, the moisture evaporates at once.

Perhaps, then, the flickering light from the globes was intended to promote the rapid growth of vegetation here.

The Earthians reached the fan and the pumps. Of the latter there were two, their gigantic pistons moving steadily up and down. One sucked air through filtering chambers and discharged it in a pulsating blast which the fan distributed. The other was an exhaust pump, drawing stale atmosphere into it and forcing it through a metal pipe which projected up through the roof of the canal.

"We won't need the exhaust," Ed commented. "The Martians had to use it because they needed a lower pressure than that which exists outdoors. We can just shut this one pump off and let the impure air blow out through the hole we made with the rock."

It wasn't difficult to locate the switches. One was mounted on the base of each motor. Ed turned the crank-like handle which controlled the motor or the exhaust pump, separating the contact points. The pump slowed majestically to a stop.

Cautiously, Bill Stevens had removed his mask, and was standing in the throbbing blast of entering air, which was fresh and untainted.

"I got to get a whiff of this stuff before I start back for LaBelle to get the crowd," Bill explained. "You two and Schnitz can stay here and sorta watch things while I'm gone."

"We're all set for an argument, I

see," said Davis, jerking off his grotesque face covering.

"Sure!" Bill answered. "Bein' messenger is a job for a tough man!"

Davis grinned at the hard old veteran. Then he held out his hand. "Indian wrestle?" he invited.

Bill met his grip with bony fingers, and for ten seconds the two swayed and strained. Then Bill Stevens stumbled to his knees.

"He's bluffing!" Jennie announced.

"I wasn't neither!" Bill returned in make-believe indignation. "That feller of yours is hard! He's the one to go to LaBelle!"

So, for a few moments more the trio bantered lightly. But they were relieved only because they were still alive, when they had thought that death was certain. The future still looked black and impenetrable.

## VII.

IN THE AFTERNOON of the next, foggy, red-lighted day, a crowd of refugees, protected by improvised masks of chemical-soaked cloth, and provided with more chemical with which to renew the masks, were struggling up the mountain pass from the charred ruins of LaBelle. The three buildings in which they had been housed were fireproof and had escaped the conflagration.

Bearing meager supplies of food, rescued from the undamaged portion of the little city, the refugees reached the Martian canal toward the setting of the twin suns.

Hectic weeks of activity followed. It might even have been triumphant activity, except for the stardust gods, whose presence was a constant, brooding threat that no human being could ever hope to surmount. Their vast wisdom and hardihood were incombustible. If they chose, they could wipe out in a moment every vestige of human life and effort that existed here.



Still, Earthians are dogged, defiant creatures, when their energies are effectively organized and directed. Among the refugees there were several who were well-suited to command; and so they labored purposefully, in spite of the crystals who hovered near them always, watching them, conversing with them, bringing them strange mental impressions by direct body contact, but never revealing their intentions in any detail. The Earth colonists tried to be happy in spite of everything. They even managed quite a celebration when Edwin Davis and Jane Terence were married.

The rougher spots in the mountain pass were leveled out. Tractors were pressed into service to haul foodstuff and materials from the vicinity of LaBelle. Better gas masks were made. Crude community shelters were erected in the canal bed. Grains and vegetables were planted there. Strange Martian devices were examined, among them the great black plates which absorbed solar radiant energy and changed it into electricity, which could be stored in immense underground batteries.

Jerry Mason, steeped in new chemical lore wrested from Martian apparatus, was sure it would be possible to produce all the required food elements synthetically from crude vegetable materials, after a short period of further study. Ed Davis and his bride were of the same opinion. All in all, things seemed to be moving along as well as could be expected.

AND THEN it happened. Just as a murky dawn was breaking over the planet which some one had christened New Earth, the ground began to tremble with a series of sharp, upthrusting shocks. Quake! Rapidly it waxed more and more violent. Deep down, from under the canal bed, and from under the surrounding hills and mountains, came the creaking, straining groans of a tortured world.

The Earth colony was thrown into a mad turmoil. Men rushed to the air-purifying apparatus, which must be kept in operation at all costs. Valiantly the Martian pump toiled on. But there was nothing that could be done to protect it. If it was strained beyond functioning, its breakdown must be accepted as a gesture of fate.

The transparent, metal-ribbed roof of the canal rattled like fluttering paper. Had its clear substance been brittle, it would have collapsed at once. There seemed nothing for the humans to do but wait for the end. The ground was buckling and heaving to such an extent that it was almost impossible to stand erect. Great chasms opened in the soil of the canal, and closed again. Dozens of people were engulfed, and the others who lived were forced to scramble constantly to keep out of harm's way.

But the stardust gods, swarming thick in the air of the canal, and above its rattling roof, showed no trace of terror. Nor had they any reason to feel such an emotion. The alien order of life to which they belonged, immune to heat and cold, to poison, to lack of air, to senile decay, and to most of the danger of violence, was practically immortal. They had nothing to fear. Only that unholy glee of theirs possessed them.

Bill Stevens, holding his dog in his arms, looked up at the swirling, muttering horde with an expression of hate that seemed to smolder.

"Havin' fun again, ain't you?" he yelled. "Bet this quake ain't natural! Bet you devils caused it!"

"Fun again!" the swarm echoed. "Yes, we caused the quake!" Its voice was a sonorous and mighty duplicate of Bill's, throbbing like thunder above the screams of the human multitude.

And then a little crystal alighted on Bill's throat; and by means of that queer neuronc contact he saw something of how the quake was produced. Perhaps this information was given him only to

stimulate his emotions, that they might be a more interesting subject of study.

An army of stardust gods had bored through the crust of the planet at a distant point with beams of concentrated heat waves originating from within themselves. There, in the molten interior, they had stirred up terrific atomic forces by means of a bombardment of neutrons. Seething lava was shifting and expanding there, causing the quake.

The pointless brutality in which it seemed to have originated was maddening. Furiously Bill knocked the crystal from his throat with calloused fingers. But the gray shard made no effort to strike back. It only circled Bill's head, tinkling out what seemed mocking laughter.

The old man staggered his way to where Ed Davis and Jennie were trying to keep on their feet; and for the rest of that horrible day he stuck close to his two best friends.

The quake settled down to a sort of nerve-racking rhythm. Every few seconds there was what seemed a terrific upward jolt.

About midday the Martian air pump was riven in two. Now the Earthians had only their masks to fall back on as a protection against the gas. There could be little question about it. Ultimate doom was at hand.

BUT just at dusk the quake stopped abruptly. With tense lack of optimism the humans waited for its renewal. But in fifteen minutes of waiting there was no farther sign of seismic shock. Even the watching crystals hung, soundless and almost motionless, in the air.

Out of the lonely silence a wind began to howl. Gusts of it, strangely cool, came through the many rifts in the now sagging canal roof. In the entering air there was no yellow haze of poison.

"Something—something's happened!" Ed Davis stammered. "Come on!"

Bill, Schnitzel, Jennie and he, fol-

lowed by straggling groups of puzzled humanity, rushed up the slope of the canal and clambered through a rent in its transparent covering. The wind that struck them was cool and fresh. The huge, tumbled mountains loomed sharp and clear in the sky, in spite of the thickening dusk, dotted again with the phosphorescent specks that were the stardust gods.

But Bill and Jennie and Ed remembered caution. They raised their masks and sniffed tentatively before they pulled them from their faces. None of them could guess at first what miracle had occurred.

And then, miles to the eastward, they saw the vast, jagged break of a tremendous precipice. Over its brink, far, far beneath, they could make out, through poisonous murk, the expanse of this world as they had so recently known it.

"I understand now what happened," Jennie said huskily. "This section of New Earth's crust—probably an enormous area—has been raised up by the quake to form a plateau far above the average level of the planet's surface. Chlorine, and the other poisonous gases, are too heavy to remain at this height. Boys, we've got a real chance to keep on living now! A real country with air as untainted as that of the old Earth! I wonder if LaBelle, beyond the mountains, was raised, too. If it was, then we'll have Earthly soil to live on. We might even rebuild our old homes there!"

"The queer thing is that the crystals done it!" Bill growled in bewildered unbelief.

He looked around at the now silent host of stardust gods which filled the air, wondering in dazed uncertainty whether he had misjudged them. But though they had doubtless heard his words and read his thoughts, they gave him no reply.

Ed Davis' laugh was shaky. "Once when I was a kid," he said, "I watched

a colony of ants building a bridge across a tiny ravine in the ground. Well, I pushed the dirt for them, filling the ravine. I don't think there was any altruism back of my act—just whim and curiosity. The ants didn't appreciate what I had done for them right away, but presently they began to make use of my improvement of the conditions of terrain, dragging their nest materials across it. What prompted the stardust gods in this latest gesture of theirs was probably something of the same order as that which gave me the idea of helping the ants. I could have trampled their nest just as well if the impulse had come."

But with new and promising developments to hold their attention, few of the colonists could think of the crystalline miracle workers now.

"Let's have a look at LaBelle, folks!" Bill shouted.

In spite of the weariness of every one, he and Jennie and Ed didn't find it difficult to get a following. Full of eagerness, a hundred people hurried after them as they started for the pass.

AFTER a long, tiring climb, they reached a point where they could look down into the huge pit that cupped a piece of the old Earth. Fire leaped in the ruins of the little city; but in spite of this, a mighty shout went up from the throats of the colonists. LaBelle had been raised, too, into the pure upper air; and though almost destroyed, it could be rebuilt to serve as a permanent home. Yes, home! Or was there still an element of haunting uncertainty and doubt? Might not the stardust gods still trample the Earthfolk they had helped?

Suddenly Schnitzel, whose mask nobody had troubled to remove, attempted a muffled bark.

Bill Stevens, looking for the cause,

glanced behind him. "Hey, everybody!" he yelled.

Notched in the pass, the gray-green moon was now visible. But its old aspect had been changed. It appeared a little smaller than usual, and it was moving—moving away! From it a propelling streamer of emerald fire projected like a comet's tail. Energy was being released by the crystalline life that crusted it, or even, perhaps, formed its entire substance—enough energy to tear it from its orbit and send it hurtling off into the emptiness of interstellar space.

There were no more crystal swarms in the weird night. Unnoticed by the humans during the excited climb and descent toward LaBelle, they had slipped away.

"The stardust gods are—leaving," Ed Davis murmured. "Doubtless they studied us to the last. Now the show's over for them and they're going on, to work other miracles, maybe a hundred million light years away! We can really breathe free at last."

He took his young wife in his arms and kissed her with a strange, unbelieving reverence.

"Say!" Bill Stevens exclaimed suddenly. "When you sorta think it over, it wouldn't be so bad bein' one of them crystals! Wanderin' around like that from place to place! That moon of theirs probably didn't belong to this world at all, to begin with! Just moved here—temporary—and now it's movin' away! Yes, sir! If it wasn't for some of their peculiarities, I almost wish I was one of them stardust gods!"

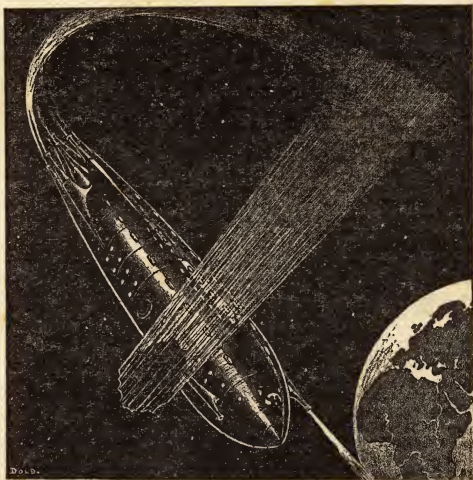
He paused and chuckled whimsically. Then: "Gosh! I almost forgot. There's a jug of somethin' better'n water which maybe the quake didn't bust out at my shack. Maybe we could go and get it and sorta celebrate our good luck!"

Jennie laughed softly. "Same old Bill!" she said. But in her heart there was warm understanding. She knew Bill Stevens—adventurer.

# SLEET STORM

by John W. Campbell, Jr.

*Article No. 17 in a study of the Solar System.*



**S**LEETING down to circle the Sun, twenty million meteors strike Earth each twenty-four hours, a hail of nickel-steel armor-piercing projectiles. On Earth to-day, man waits and hopes to send out a ship, a frail bubble of air wrapped in metal, a thing to reach other worlds beyond that sleet storm of death. Twelve miles a second

—twelve times as fast as the shells of the Big Bertha—the meteors move when they strike Earth at their slowest. Twenty-five miles a second is an average speed; many have been observed thundering through the upper atmosphere at fifty miles a second.

What chance of survival would the fragile, metal bubble have if it went out

beyond that near-invisible protective film of air that surrounds the Earth?

It would have one chance in two thousand of being hit if it went all the way from Earth to Mars through that "sleet"! Twenty million a day strike Earth—but Earth presents a projected disk surface of fifty million square miles. It sweeps through eighty million million cubic miles of space in that twenty-four-hour period. Those millions of meteors are distributed so thinly through that vast volume that there must be less than one in every four million cubic miles of space.

One in four million cubic miles of space—at Earth's orbit. Since they are circling the Sun, most of them in exceedingly eccentric orbits, there is a natural concentration of them as the Sun is approached. At Mars' distance there would be even fewer. Further, no space ship man ever built is going to equal the size of the Earth; there'd be no sense to it. But a ship fifty feet in diameter presents a front-surface area of about one ten-thousandth of a square mile instead of fifty million square miles. If such a ship makes the fifty million-mile trip to Mars, it sweeps only five thousand cubic miles of space, it has less than one chance in two thousand, probably, of sweeping the particular volume that contains a meteor.

But—suppose by ill luck it does sweep into that one deadly volume. What then? The meteors, those twenty million a day that strike Earth, are not the kind you see in museums. It has been estimated that ten-thousand first-magnitude meteors could be held in one hand! Pinheads are huge by comparison.

But pinheads don't ordinarily move at speeds of dozens of miles a second. What damage would one of those minute things do if it did strike a ship? Although the results on striking Earth and in striking a ship are not strictly comparable, they may give indications. One upsetting factor is present; Earth's

gravitational field. That accelerates any body falling to Earth from free space to a minimum velocity of seven miles a second, the least speed theoretically possible.

Actually, meteors appear to be true members of the solar system, revolving in true orbits, highly eccentric and distributed in any plane, any direction, at any angle. They act, so to speak, like individual comets, each on its own wild path. Certain great meteor showers are, of course, the remains of broken comets, fragments torn apart by close passage of some major planet. But since they rotate about the Sun as comets do, their velocities are naturally high; meteors do not *fall* to Earth; Earth gets in the way of a meteor with a rendezvous at the Sun. Therefore, meteors traveling only twelve miles a second are few and far between indeed. The average velocity of meteors appears to be about twenty-six point nine miles a second.

SINCE twelve miles a second is the minimum speed, let us work with this most conservative value. When a meteor enters our atmosphere, it has an energy represented by its motion, equal to  $\frac{1}{2}MV^2$ ,  $M$  being its mass and  $V$  its velocity. In coming to rest, this energy is changed into some other form; practically, to heat. Since heat is a motion of molecules, the velocity of the body may be directly spoken of as "temperatures," for the molecules are all moving at twelve miles a second; it happens they are all moving in the same direction, so that the temperature isn't obvious, but it is a legitimate expression. The meteor, then, has a temperature of about 50,000° C. That is far more than sufficient to volatilize any substance in the universe; tungsten boils vigorously at a tenth of that temperature. How, then, can any meteor possibly survive to become a meteorite?

The atmospheric resistance a meteor encounters is directly proportional to

the square of its velocity times the density of the air. At 12 miles a second and at sea level, this resistance would be 8 tons per square centimeter, a pressure readily capable of crushing the nickel-steel alloy of the metal meteors. At high altitudes this resistance is, of course, more reasonable. As the meteor descends it does work compressing the air directly in front of it; to only a limited extent does a meteor stir up air currents. A body moving through air at normal speeds displaces the air in front of it, and the air behind flows in as it passes. But a meteor, lashing through at that immense speed drills a hole through the air as though it were a solid body; air cannot move away from in front of it because the shock of its coming is so swift it cannot be transmitted before it. The air hasn't time to move out of the way, but can only pile up on the forward surface. Similarly, behind it is a space where the meteor has driven through, tearing the air out of place, and passing on long before surrounding air has had time to fill in the emptied space.

The meteor is doing enormous work, compressing, piling up air on its forward surface. More and more is jammed violently against it. Almost instantly the meteor is cushioned by a thick layer of terrifically compressed air. The work is done *compressing* air, not in rubbing against it. The air is heated, not the meteor. The result is that only the forward surface of the meteor is slightly heated, enough to fuse it superficially, perhaps, but nearly all the energy is released in the compressed air.

The air is heated to a fearful temperature. Only a comparatively small amount of air (about two thousand six hundred grams per square centimeter of front surface) is involved, and this is heated at a temperature of thousands of degrees. It radiates, consequently, because of the compression-heating effect. Nearly all that radiation is far in the

invisible ultra-violet; what we see are the trickling dregs that have fallen far down the spectrum to the visible band. Ten thousand first-magnitude meteors in one hand—yet each, during its brief flight, releases energy at a rate equalled only by something like a ten-million-dollar power house. The work done by a meteor moving at twelve miles a second through sea-level-density air would be at the rate of five billion, six hundred and sixty million watts per square centimeter of front surface. About thirty-five billion watts per square inch. Even seventy-five miles above the surface of Earth it would encounter a resistance that dissipated three hundred and twenty thousand watts per square inch of front surface.

That furious dissipation of energy will, obviously, stop any small meteor long before it reaches Earth. But the resistance varies according to the front-surface area. Now the greater the meteor is, the more mass it has behind each square inch of front surface; the more massive it is, the more chance it has of driving its way through the frightful resistance. A meteor weighing one thousand tons, for instance, would penetrate Earth's atmosphere almost unchecked, leaving a vast volume of ruptured air, a vacuum, in its wake. If a small, but sufficiently large meteor penetrates the atmosphere undestroyed, it is stopped, perhaps at an elevation of only a mile or so, to continue its fall as an ordinary, dropped stone. A little larger, and it might just strike the surface before the last of its velocity is braked away. A meteorite weighing two hundred pounds or more, and falling on soil, penetrates to several yards. But our one-thousand-ton meteorite would scarcely be checked by the air, and might strike at a velocity of a full twelve miles a second.

IT MAKES not the slightest difference whether that meteorite strikes soft



sandstone, or plows into hard, igneous granite rock. The crystalline strength of the granite is absolutely unimportant. The meteorite has to move that resisting medium out of its way; that is the fundamental. The rock, the matter, must be accelerated, suddenly, to its own velocity of twelve miles a second, a terrific, instantaneous acceleration. The resistance of ordinary surface soil or rock, due to inertia alone, is the important thing, and that will amount to about two hundred thousand tons per square inch. About two thousand times the crushing resistance of good steel. The nickel steel of the meteorite, and the hard granite would, alike, flow like true gases; the granite would act precisely as the air did, with the exception that it now constitutes an immensely (two thousand times) denser gas. The energy released in a tenth of a second would volatilize both meteorite and surrounding material—would, in effect—explode it terrifically into flaming gases at thousands of degrees.

Heat or no heat, under that pressure both meteorite and stone would act as gases. Suppose it had encountered, instead, a mass of solid armor plate. Again, both would explode into flaming gas, the greater strength of the steel would merely make the resistance one part in two thousand greater, an utterly unimportant factor. But—the steel would, nevertheless, offer a far greater resistance to penetration, because there is more mass per cubic inch that must be accelerated; steel is denser than granite.

Lead, or liquid mercury metal, however, would have a greater resistance to penetration than that hard steel! Osmium, density 3 times that of steel, twice that of lead, would be the most resistant of all. But it is inertia, not strength, that counts.

Now what of our space ship, the metal bubble in emptiness? Meteors are tiny things, pinheads moving at fearful

speed. The penetrating power of a rifle bullet is quadrupled if the speed is doubled. A high-power rifle throws a bullet at close to a mile a second, and will penetrate some sixty inches of hard wood. At two miles a second—it would penetrate about five inches and explode into gas. Would a meteor pierce the hull of a space ship? A wall, say, built of thin steel, covered with lead. Or, would it explode into gas at the surface of the lead, leaving the ship practically uninjured, or merely dented? Or would the sudden eruption of gas be so violent that the gas alone would force a huge breach in the wall, though the meteor originally was no more than a pinhead?

At any rate, it would seem that the pinhead meteors would not be apt to destroy a ship. Greater ones might. But meteors weighing one pound are wonderfully rare, those weighing ten pounds are far scarcer yet. A meteor weighing a ton—

Such a thing, furthermore, could be detected. Radio-wave reflection and electrostatic devices would warn of the approach of such a monster in the emptiness of space. Magnetic devices alone could not be relied on, for there are two types of meteors: the stony and the metallic.

THE METAL meteorites are composed of about ninety per cent metallic iron in alloy with various percentages of nickel. (which may run as high as twenty-five per cent) and smaller quantities of cobalt, copper, phosphorus, sulphur and other elements. Those elements are joined in curious minerals never found on Earth; in fact, many of the meteorites in museums to-day have been recognized as such because of the non-Terrestrial minerals occurring in them.

Most of the meteorites exhibited in museums are of this type, though the metal meteorites are, actually, rarer than

the stony type. Metal meteorites are hard, tough, relatively permanent, and much more readily recognized. The stony meteorites are easily confused, by the layman, with ordinary rock. The unaccustomed action of water and frost rapidly disintegrate them.

The metallic meteorites present one characteristic that has long puzzled metallurgists. Polished, and etched, the individual metal crystals are readily visible as large light-and-dark colored patches, shaped rather like a one-inch section of the broad end of a toothpick. The large network of crystals of metal are filled with silicate minerals peculiar to meteorites. Quite recently, a metallurgist has succeeded in crystallizing an iron alloy to form the same type of crystals observed in the meteorites, by slow, careful cooling from the molten stage. The question of how meteorites formed, however, remains very largely a question, for the conditions necessary for this type of crystallization are hard to understand.

The stony meteorites, too, indicate a slow cooling from a liquid stage. Both stony and metallic, on heating in a vacuum, yield large volumes of gases, including carbon and hydrogen compounds, but little or no oxygen. Helium

is found in small quantities. Helium is the product of radioactivity, but the stony meteorites are less than one fourth as radioactive as Terrestrial granites, while the all-metal meteorites are almost wholly free of any radioactivity. This may be interpreted in a number of ways, primarily as being indicative of their origin, but in a way as yet undetermined, or as an indication of age; that they are so incredibly ancient that the long-lived uranium atoms themselves have at last broken down.

Under the latter interpretation, it would indicate an age about six billion years greater than that of Earth. This throws considerable doubt on the time-clock interpretation, since dynamical considerations of the entire solar system indicate, vaguely, that something important happened two billion not eight billion years ago.

But in whatever way they may have originated, whether they will or will not constitute a menace to space ships to come, they represent to-day a thing entirely unique; they are the only material things that reach Earth from the regions of the stars: light—and meteors. Those two things alone come to Earth from outside, to give any hint of things beyond our planet.

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## AN OPEN FORUM OF CONTROVERSIAL OPINION

### History vs. Legends.

Dear Mr. Tremaine:

Perhaps this letter should be addressed "Dear Science Discoursemen" instead, as it is meant more for the readers of this department and for one John Davis Buddhue in particular. Mr. Buddhue's recent letter—and James A. White's, which I enjoyed immensely—is the main cause rising to this latest outburst.

I never read much on Mu, but of the one-time existence of the lost continent of Atlantis, I am firmly convinced. True, many say it is a mere myth, unsupported by scientific fact; but it is also true that if a person does not believe in a thing and searches for proof of its unexistence, they are blinded to anything that tends to contradict their beliefs. I do a lot of reading on pretty near all subjects, and I have read more things that prove the existence of a continent in the Atlantic than otherwise. Mr. Buddhue claims there is absolutely no relation in any way between Mayan and Egyptian culture, bringing forth the point of the languages as an example.

Now I bring this out as a contradiction. In a recent book "In Quest of Lost Worlds," by Count Byron de Prorok, the author, an archeologist of note, explores parts of the North African continent, and also Central America, to find evidence that would bear out his belief in Atlantis, or at least of a lost mid-Atlantic continent. In Africa he struck a trail, or belt, of ancient culture that stretches from the Nile to the Atlantic; in Central America he found evidence of exactly the same culture. He also mentions that traces of the same ancient civilization in other parts of the world have been found. Now, if this is true, and I have no reason to doubt it, how did this ancient country cross the Atlantic unless there was a continent, a string of islands, or unless they had boats that were far superior to any we have been able to discover in antiquity?

The ancient civilization of the Americas worshipped the same god the Egyptians did, namely the sun god—a golden disk surrounded by wavy lines or flames. The Mayan ruins look quite like Egyptian ruins, and the pyramid was also

known in Central America. Is it likely that two great peoples—the Mayans and the Egyptians—separated by thousands of miles, with no intercourse of any kind, could have had the same god and developed the same type of buildings?

You say, Mr. Buddhue, that you once believed in Atlantis and Mu until you examined the facts in the cold light of science. That's all very well. But science, and men of science, have made mistakes in the past, and there is no reason why it and they should suddenly decide to do otherwise. When Jules Verne wrote "Twenty Thousand Leagues Under the Sea" they said the submarine was impossible and scientifically proved it so. Before the Wright Brothers built and flew the first airplane it was scientifically proved impossible for a heavier-than-air machine to fly.

To-day scientists of one group will declare another group is barking up the wrong tree. Look what was proven scientific falsehood when that famous man dropped those weights of his from the Leaning Tower of Pisa. Once man was supposed, and proved to be, born from all sorts of things: vapors, a kiss, etc. Science to-day says we'll never fly to the moon. They said that a few years ago about any kind of flying; to-day it's common. In the light of past mistakes, why should we accept as final the scientific decree on Atlantis?

There is proof that lands that are to-day above water were at one time submerged. Is it, therefore, too difficult to believe that a land that once bathed in the warm light of the sun is to-day lying in the watery deeps?

How do the savage tribes to-day act when they see an airplane, hear a gun fired, see a match bring forth flames? How would the savage races of yesterday act if they saw an Atlantean flying machine soar overhead?

A dragon, we learn from perusal of the myths, breathed fire—at least one type did. When man first tried flying with balloons he attempted to use steam engines to propel the thing along. What would you think if you were to look up in the air some night and see a long shape floating along, spouting smoke and sparks? Suppose you, Mr. Buddhue, were a savage—dressed in skins perhaps, and holding a spear in your

hand—and you saw that. Might you not go home and tell a story of seeing a fearsome flying thing that breathed fire? Wouldn't the story be handed down from generation to generation, each generation changing it a little until it grew out of all proportions and became a winged serpent or a fiery dragon? Perhaps the Atlanteans went out on slave hunts and sometimes people saw the slaves being taken into the flying thing. Might not their ignorant minds believe that what they had seen was the monster eating them? Might not they feel that if they offered it sacrifices it would be appeased and not come again?

What of Cyclops, the one-eyed giant? What would a man in a diving suit with a light fastened to his helmet look like at night to ignorant savages? In their terror the awesome figure might assume gigantic proportions, a giant with one eye, a glaring eye.

White says we might let these myths go as the childish imaginings of a primitive people. In any books of savage races that I have read, their imaginations were pretty limited as far as pure thought is concerned. But let them see something they don't understand and they weave a nice tale around it, making it as awesome and as terrifying as possible. In other words, the stories of a savage people usually—perhaps always—have their origin in absolute fact. Great Scott! Look how the history of the past thousand or so years becomes garbled and inaccurate, and it is written history. Think of the history of a people that has been handed down by word of mouth only for 9,000 or 10,000 years! Would you be able to recognize it as history?

In closing, may I say that it amounts to sacrifice for a science-fiction fan to say a thing is impossible? Also, don't be offended at anything I might have said, Mr. Buddhue. You merely said a few things that were contrary to what I think, and for the rest of the readers to be able to judge, they have to have both sides of the story. Another thing, I think it a dirty shame for James A. White to crawl into his hole now that he has got the ball rolling so well. But, I feel sure he'll be back.—Leslie A. Croutch, Waubeek Street, Parry Sound, Ontario, Canada.

a 3-dimensional object in the mind's eye, but it is impossible to "see" a 4-dimensional object, even in this manner. For your convenience I sketched the 4-dimensional figure below:



If Donald would like further information, he could let me know. I would be glad to communicate with him.

Further, a 4-dimensional object, i.e. a hypercube, may be called a tesseract, and has 24 square faces, 32 edges, and 16 right angular corners.

Hugh McKenna, Jr. of Oregon, asks: "Is it possible to divide a second?" It is quite obvious that a second can be divided, for if the second were divided into 60 parts, on the face of a clock, just  $\frac{1}{60}$  of the period would be required for the hand to run over 30 of these divisions, as would be required to pass over 60, right?

You also say you are not sure there is such a thing as time. Would you be willing to bet your entire fortune—\$1 or more—that no period called time elapses from the time that you start from home to get to your girl friend's house? More seriously though, if there were no such a thing as time, then the speed of light would be instantaneous, for only then would there be no period of time for the light to reach an object from the source.—Frank Bochik, Jr., 3905 Deodar Street, Indiana Harbor, Indiana.

### "Lapse of Memory."

Dear Editor:

Regarding Mr. Stone's letter on "sensation of repeated occurrences": The theory that I held to as a most satisfactory explanation is that of "lapse of memory." Our memories fail us for a period of, perhaps, a second's duration (or a small fraction of a second). This period is too small to be noticed at the time it occurs, but for a short time our memories are a second (or fraction of a second) behind our actions. Therefore, when we remember the actions, we have the impression that they occurred in the past.

This theory is not my own, and I cannot state it as clearly as the original, but perhaps you may be able to see the point I am trying to set forth.—D. E. D., New River, Virginia.

### Four-dimensional Objects.

Dear Editor:

As many other readers begin, I, too, am sending this, my first letter.

Donald Franson of Chicago asks for an argument against his 4-dimensional anti-argument. May I offer it?

It seems that Donald cannot conceive of a 4-dimensional object. Would you be so narrow-minded as to think that what is impossible for you to comprehend is, therefore, impossible to be? But I'm not blaming you, for the human eye can really see figures of 2 dimensions and that's all. We cannot really see 3 dimensions, we merely take it for granted, as far as sight alone is concerned. It is quite possible to "see"

### Another Theory on Atlantis.

Dear Mr. Tremaine:

I read with regret in the current issue of your magazine that Mr. White has decided to cease firing on the Atlantis front. May I, as one of the adherents of the opposing party, beg him to reconsider? The battle is just getting good, and it would be a shame, to say the least, for him to decide to leave us to our troubles!

In the meantime, may I suggest that the more virulent of the Atlantis addicts read Plato's "Timaeus" and "Critias," and see how little Plato actually *did* say on the subject of Atlantis. In fact, he didn't say it—one of his stooges, "Critias," (who, by the way, was one of the crookedest politicians that Athens ever produced) did the talking. And it was supposedly one of his (Critias') ancestors who got it from Solon, who got it from the priest of Sais. And it is very difficult to state that anything about Solon was a historical fact. In fact, Plutarch admitted that very little was known about him, and Plutarch was a lot closer to him than we are—by almost 2,000 years.

The fact that a theory, such as that of Atlantis, correlates and "explains" a great many facts doesn't prove a thing. A dozen more theories may do the same thing. Likewise, the fact that the theory may be a very pleasant one, and appease nostalgic longings for a nonexistent golden age and Garden of Eden—"Garden of Hesperides," "Land of Kul," "Islands of the Blest"—not to mention the "Blessed Isle of Avalon," and "Never-Never Land," is no evidence of its truth. That may be good theology or religion of mysticism or philosophy, but it's certainly not science. Science must be skeptical, and view every theory with a jaundiced eye. And even when a theory proves up, it must

always be kept under suspicion, ready to be jettisoned at the slightest pretext. A theory is not considered true or false—it's useful or useless. If you want a theory to explain the Atlantis legend of Plato, consider the following, offered free, without charge:

It is a well-known fact that Crete, by 2000 B.C., was the head of a mighty sea empire that levied tribute (a euphemism for graft) from the whole Mediterranean. At that time the Greeks, or their ancestors, were a flock of savages with a governmental system, if such it may be called, resembling that of Britain at the time of Julius Caesar's invasion. But here is the surprising fact: the Greeks of Plato's day (about 400 B.C.) had not the slightest memory of the greatness of Crete, as compared to their own impotence. They knew that once they had fought with Crete (the legend of the Minotaur), but they did not remember it as the mighty sea power it once was. In their time it was a broken-down backwater of civilization, inhabited mainly by bandits.

Plato, in "Critias," tells of a great war between a mighty sea power and the Greeks and Egyptians, who probably had better recollections of it than the Greeks did. Might that not be the vague tradition of the great Cretan expansion and then the downfall that occurred about 1500-1000 B.C.? The most likely echoes were the fall of Troy, and whose residue was the conflict of the Hebrews with the Philistines? The times are right, and check with other historical events of the period in question. Certainly, about 1500 B.C., the Achaean ancestors of the Greeks sacked Knossos, and the residue of the Cretan warriors descended as a flood against the shores of Egypt and the eastern Mediterranean.

All right. They had the tradition of the war—real enough. But they couldn't find any place to put the enemy. The hick island of Crete certainly couldn't be it! So Plato deduced that the enemy must have come from somewhere else, and the area just outside the Straits of Gibraltar was a nice place to put it. Certainly no Greek could be there to check upon his statements. If he did, the hardy Phoenicians, who calmly navigated those waters—though Plato said that they were unnavigable due to the mud-bank residues of Atlantis—would cut his throat. The sea-going Semites knew all about monopoly! And, to explain the sudden end of the war, he hypothesized that Atlantis had sunk. And the stories of gods and heroes were the legends rising from the struggles between the Cretans and the Achaeans.

There you have a theory, simpler than the Atlantis one, with the advantage of a check with known historical facts. But—I don't say it's true. Maybe it is—maybe it isn't—I dunno. Personally, I doubt it. After reading "Timaeus" and "Critias," I'm even more thoroughly convinced that Plato made it up to illustrate his theories of government. It was a habit of his, you know.

Again, above all, I suggest that anybody interested in the legend read Plato. There isn't much on Atlantis, and you can read the two books through in an hour. It's worth it, if only to see upon what a thin foundation the whole magnificent edifice has been built.—John D. Clark, Ph. D., 3809 Spruce Street, Philadelphia, Pa.

## Re: Lightning.

Dear Mr. Tremaine:

During the past few days I have been looking over back issues in which I had not read the Science Discussions. I wish to make some comments.

In the one issue there seemed to be several letters concerning the direction of flow of lightning.

My theory is that it strikes both up and down, the cause being that rain clouds become charged, either negatively or positively, and that lightning is merely the inflow or outflow

of electricity which neutralizes it when it is charged negatively to a high enough degree so that lightning may be possible. To give one idea of the extent of such a charge, it requires 1,000 volts for lightning to move 1/25 of an inch. Flashes may be several miles in length, so one can see a considerable charge must be attained. A flash of lightning may occur between 2 clouds or n cloud and an object on the earth or the earth itself. Electrons in another cloud or on the earth will be repelled by the electrons in the negatively charged cloud, leaving the surface of cloud or earth positively charged. The electrons in the cloud then flash downward to neutralize both the discharging cloud and receiving cloud or object on the earth.

When the cloud is charged positively, the electrons flash up from the ground to the cloud, again equalizing both factors.

In the same issue Mr. Charney wondered why space was black. That is very easily explained. If space were lighted, it would mean that a gaseous atmosphere of some sort, containing moisture, must exist throughout all space, as that would be the only medium by which it could be lighted. Our sky is lighted by the rays of the sun reflecting off the air and moisture particles in it and becoming diffused, producing the effect Mr. Charney apparently desires in space. I think that he will agree with me that no such condition exists in space. Space is black and dark, except for the blinding disk of the sun and the tiny pin points of the distant stars, which in no way light space except where their light strikes. The sun would not cover up the stars by its blinding light unless through the fault of the eyes of the observer.

I hope I have been right in my assumptions.—Andrew Underhill, Jr., Bellport, Long Island.

## Celestial Mechanics.

Dear Sir:

The iodine question has petered out and I feel like starting something else. The following is in some measure taking up Mr. Campbell's invitation to find fault with his celestial mechanics as issued in January's Science Discussions, though not specifically so, as I have seen this error—if error it is—in a number of places.

In the story, "Night," then, as well as in a number of other tales, the planets are depicted as slowly approaching and at last falling into the sun. Why?

Take it thus: The planets are all held in their orbits by the nicely balanced forces of centrifugal and centripetal force, i. e. the mutual attraction of the sun and each planet is exactly balanced by the tendency of that planet to fly off at a tangent to its orbit because of its forward motion. So if any planet is going to fall into the sun it must be because of a decrease in forward motion or an increase in the sun's attraction. Since there is presumably no friction in a stress space, there is not much chance of the former happening, and of the latter, none at all. Quite the opposite, in fact, the sun is losing mass at the rate of four million tons a second in radiation—in round figures three hundred and fifty billion tons a day. In a billion years or so, even granting that this enormous flow of radiation will slow down somewhat in the meantime—Well, play that on your adding machine! It comes to a pretty good weight in any man's language.

Remember, too, that gravity varies inversely with the square of the distance, and the farther away you get, the faster you get farther.

How about it, you physicists and mathematicians? Does the good old earth at some future time splash into a sullen cinder sun or does it wander off on an aimless peregrination some where in the general direction of the Milky Way—destination unknown?—R. S. Vickers, 626 Constance Avenue, Victoria, B. C.



**Information Wanted:**

Dear Editor:

The north and south magnetic poles are not located at the axial north and south poles, and they are not diametrically opposite to each other. A line joining the two would not pass through the center of the earth.

The south magnetic pole is located on South Victoria Land, Antarctica, a little south of the 70th parallel of south latitude.

The north magnetic pole, on the Boothia Peninsula, is almost exactly on latitude 70, north:



If the earth spun on the magnetic poles, it would wobble a great deal and the equator would not be as it is now:



But here is the peculiar thing: if the globe, spinning so, were to be cut into two "hemispheres," the smaller one would include a great part of the Pacific Ocean and a sizable chunk of the North Atlantic. I haven't the mathematical ability nor the necessary figures, but I suspect that the center of such a hemisphere would very nearly be the center of gravity of all the oceans of the earth on a flat map.



Why? Are we to conclude that the watery portion of this planet is stronger magnetically, or is a better conductor of magnetism than the

land? It seems to count for more in magnetic balance. Perhaps some one who knows his stuff can tell me if this is right.

It is true that there is more water in the southern geographical hemisphere, and that seemingly, as a consequence, the south magnetic pole is nearer the south geographical pole than is the case in the north.—Jack Speer, 117 North Fourth Street, Comanche, Oklahoma.

**Speed Greater Than That of Light?**

Dear Mr. Tremaine:

I finished your July number some time ago. Since then I have been musing over the letter of one Russel Stewart. Stewart contends that an object moving at the rate of 200,000 miles per second would emit light traveling at 186,000 miles per second, hence no light would precede the object and (stating Einstein) it would be traveling backward. I suppose he meant that it would appear to be traveling backward. At any rate, unless I have been reading authors that are all wet, I believe Einstein says that there can be no speed greater than that of light. Am I right or wrong?

To Donald Frauson: I think it is quite possible that there may be another dimension. Perhaps man will never discover it, but it may exist. Some of the stories written by hare-brained authors are enough to sour most minds against the idea. We don't know whether another dimension exists or not, so why deride the idea?

Several letters were written to Science Discussions about a letter from a Mr. Stoue. I, too, have had much the same experience, in which it seems that somewhere I have done this thing before. The ideas are always vague, but they are there. Mr. Masson's explanation was most logical.

I would like to ask any one near sixteen and seventeen years of age to write to me. Foreign correspondents are welcome. And I would also like to send an appeal to Wang Tso Liang, in Peking, China. Liang, if by any chance you read this, will you please get in touch with me? It is very important.—Glenn Whalen, Marshall, Ill.

**Explanation of Repeated Occurrences.**

Dear Editor:

In the July issue I notice there is quite a discussion on Mr. A. T. Stone's letter re: "sensations of repeated occurrences."

Mr. William A. Wooding mentions "An Experiment with Time." I have just finished this book and its sequel, "The Serial Universe," and I believe that any one interested in going into the subject to any extent should at least read "An Experiment with Time." Both books are by J. W. Dunne, and are published by Faber and Faber.

Mr. Dunne's explanation of the "sensations of repeated occurrences" is that whether you can remember or not you have recently dreamed your waking experience. The difficulty is that practically all dreams are forgotten within a very few minutes after waking.

Mr. Dunne outlines an experiment that can easily be carried out to prove his ideas, and now that so many readers have become interested in this phenomenon, it would be interesting if some of them could conduct Mr. Dunne's experiment and report their results through Science Discussions.

I am sure that the book can be found in most public libraries for those who are interested.

Personally, I have carried it out with amazing success, and I am sure that those who follow it up faithfully will be both pleased and surprised.—T. W. Deachman, 210 Metcalfe Street, Ottawa, Ontario, Canada.



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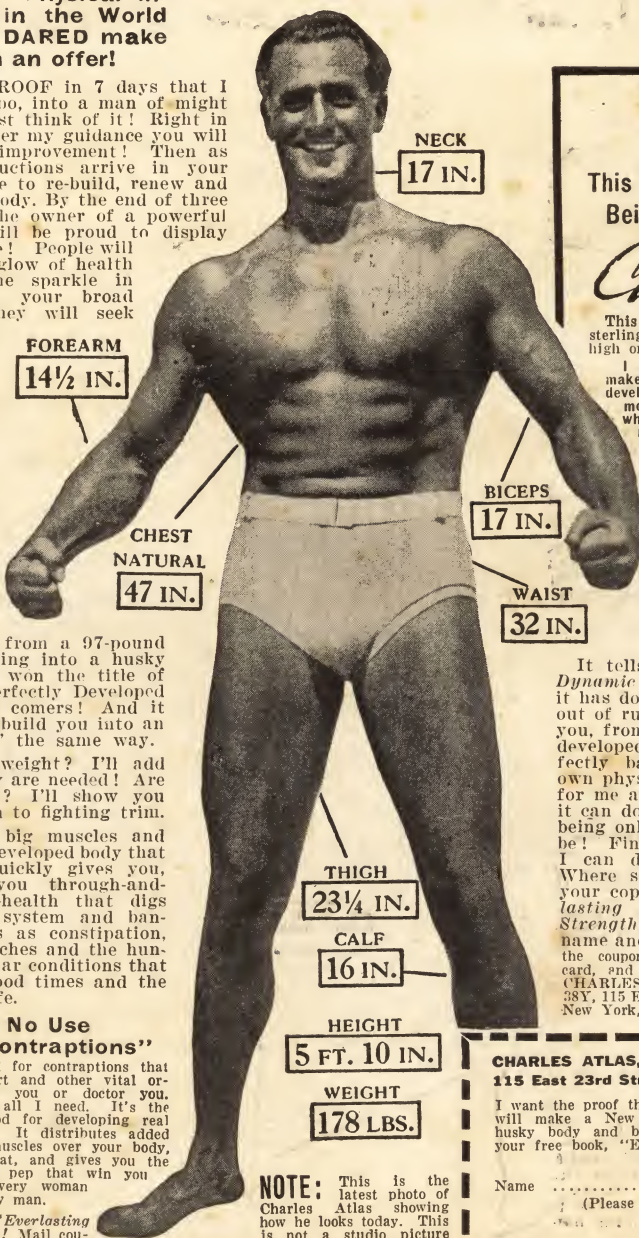
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And with the big muscles and powerful evenly-developed body that my method so quickly gives you, I'll also give you thorough-and-through health—health that digs down into your system and banishes such things as constipation, pimples, skin blotches and the hundred-and-one similar conditions that rob you of the good times and the good things of life.

## I've Got No Use At all for "Contraptions"

I haven't any need for contraptions that may strain your heart and other vital organs. I don't dose you or doctor you. *Dynamic Tension* is all I need. It's the natural, tested method for developing real men inside and out. It distributes added pounds of powerful muscles over your body, gets rid of surplus fat, and gives you the vitality, strength and pep that win you the admiration of every woman and the respect of every man.

Get my free book, "Everlasting Health and Strength"! Mail coupon today. Gamble a stamp to prove I can make YOU a new man!



**NOTE:** This is the latest photo of Charles Atlas showing how he looks today. This is not a studio picture but an actual untouched snapshot.



This Sterling Silver Cup  
Being Given Away by

*Charles Atlas*

This valuable cup, made of solid sterling silver, stands about 14 inches high on a black mahogany base.

I will award it to my pupil who makes the most improvement on his development within the next three months. Therefore, no matter what your measurements may be now, you have an equal chance to win this cup for permanent possession—and with YOUR name engraved on it!

Get my free book by mailing coupon below!

48-PAGE BOOK  
**FREE**

It tells you all about my special *Dynamic Tension* method, and what it has done to make big-muscled men out of run-down specimens. It shows you, from actual photos, how I have developed my pupils to the same perfectly balanced proportions of my own physique. What my system did for me and these hundreds of others it can do for you too. Don't keep on being only half of the man you CAN be! Find out what I can do for you. Where shall I send your copy of "Everlasting Health and Strength"? Put your name and address on the coupon, or a postcard, and mail it today. CHARLES ATLAS, Dept. 38Y, 115 East 23rd Street, New York, N. Y.



**CHARLES ATLAS, Dept. 38Y,  
115 East 23rd Street, New York, N. Y.**

I want the proof that your system of *Dynamic Tension* will make a New Man of me—give me a healthy, husky body and big muscle development. Send me your free book, "Everlasting Health and Strength."

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**SPRINGBOARD ACE.** Jane Fauntz Manske says: "When I smoke Camels at mealtimes and after, I find that my digestion runs more smoothly." The best meal digests easier when you smoke Camels.



**THREE-TIME OLYMPIC WINNER** in the high dive. Dorothy Poynton Hill says: "I prefer Camels because they don't get on my nerves. And, like so many other women, I like Camel's flavor."

## WHAT SOME OF AMERICA'S AQUATIC STARS SAY ABOUT SMOKING...



(Left) **LENORE KIGHT WINGARD.** She has broken 7 World's Records—16 Nat'l Records—in speed swimming. Lenore comments on smoking: "Camels are certainly mild. They never jangle my nerves."

(Right) **HAROLD "DUTCH" SMITH,** who holds Olympic diving championships, says: "I've found great pleasure in Camels. I long ago found Camels restore my energy after a strenuous meet."



(Left) **PETE DESJARDINS** — internationally famous diver—speaking: "Divers like a mild cigarette that doesn't upset nerves. That's why I prefer Camels."



**MISS GLORIA WHEEDEN** says: "I always think of smoking Camels and eating as going together."

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**FOR DIGESTION'S SAKE — SMOKE CAMELS**